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ABSTRACT

Since existing migration studies, according to the author, offer policymakers little clear guidance on how national or regional human resource development policies might affect population redistribution, this report attempts to bridge the gap between previous research and the concerns of policymakers. A model based on the human capital approach adapted to the family context is tested using longitudinal data on households (from the University of Michigan's Panel Study of Income Dynamics). (The sample is restricted to married couples so that family interactions--the effects of both spouses' characteristics and opportunities on the family migration decisions--overlooked in most migration studies but having important implications for policy, can be fully analyzed.) Five sections are included. Section I gives background information on migration studies and brief information on the model tested in this report. Section II contains the underlying conceptual framework and some general hypotheses derived from it. Section III previews the empirical analysis with a discussion of the data, sample, estimation techniques, and definitions of variables. In section IV, specific hypotheses explaining whether or not a family migrates are proposed and tested. The choice of destination analysis is presented in Section V. Section VI includes a summary of the main findings, a discussion of the policy implications of the research, and suggestions for further research. (SH)

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WHY FAMILIES MOVE: A MODEL OF THE GEOGRAPHIC MOBILITY OF MARRIED COUPLES

PREPARED UNDER A GRANT FROM THE EMPLOYMENT
AND TRAINING ADMINISTRATION, DEPARTMENT OF LABOR

JULIE DaVANZO

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PREFACE

Many policies under recent consideration for the development of human resources potentially affect the migration of labor. Some, such as the application of relocation assistance bonuses, are designed to do so directly by enabling people to move to available jobs. Others, such as negative income taxes, wage subsidies, unemployment insurance, public employment programs, minimum wage laws, and the Equal Rights Amendment, might do so unintentionally by altering the costs and benefits of migrating. It is essential to anticipate both the direct and the indirect effects of a particular policy if its overall impact is to be assessed and unintended influences are to be avoided.

Existing migration studies offer policymakers little clear guidance on how national or regional human resource development policies might affect population redistribution. Available models do not focus on the variables (or samples) of policy interest, and often the data from which the models are estimated are inappropriate. This report attempts in three ways to bridge the gap between previous research, with its limitations, and the current concerns of policymakers. First, it defines explanatory variables to correspond to factors that might be affected by policy or are otherwise of policy interest. Second, by drawing on longitudinal data on households, it avoids many of the problems and biases encountered in studies that use aggregate data. Third, it employs new methodological features, such as imputing wages that could be earned in alternative destinations and explaining family-level choice of destination.

The study is restricted to married couples so that family interactions (the effects of both spouses' characteristics and opportunities on the family migration decisions), overlooked in most migration studies but having important implications for policy, can be fully analyzed.

The methodological innovations and findings of this research should provide a fuller understanding of policy-related as well as technical aspects of the migration process. Its findings should therefore be of particular interest to persons having a basic scientific interest in the human migration process as well as to policymakers concerned with diagnosing the way they might influence population redistribution. More analysis is needed for other time periods and samples to refine the methodology developed here and to test for the general applicability of the study findings.

This report was prepared for the Employment and Training Administration, U.S. Department of Labor, under research and development Grant No. 21-06-73-50. Since grantees conducting research and development projects under Government sponsorship are encouraged to express their own judgment freely, this report does not necessarily represent the official opinion or policy of the Department of Labor. The grantee is solely responsible for the contents of this report.

SUMMARY

Geographic mobility is the means by which human resources can move to their highest valued use. Existing empirical studies of migration suffer from a number of shortcomings that make them inadequate for determining whether migration does transfer resources from locations where they are not fully employed or are not most highly valued to places where they can make their most valuable contribution. Also, they do not indicate how various human resource development policies might affect the geographic mobility of labor.

This report attempts to bridge the gap between previous research, with its limitations, and the concerns of policymakers. A model based on the human capital approach adapted to the family context is tested using longitudinal data on households (from the University of Michigan's Panel Study of Income Dynamics). The sample is restricted to married couples so that family interactions can be fully analyzed. Special care has been taken to define the explanatory variables to correspond to factors of policy interest. In addition, the study employs several methodological features new to migration research, such as imputing wages that could be earned in alternative destinations and explaining family-level choice of destination. Separate equations are estimated that explain which families become interdivisional migrants, migrants to noncontiguous states, interstate migrants, migrants to noncontiguous counties, or intercounty migrants; equations explaining residential moves and job-related plans to move are given for comparison.

Some of the findings of the research help to explain paradoxes found in previous studies (e.g., the seeming absence of "push" of economic conditions at the place of origin), whereas others confirm relationships found before (e.g., the effect of prior migration on subsequent geographic mobility) but shed new light on the causes of the underlying behavior. Certain results disagree with the conclusions of some recent studies (e.g., those that find a working wife always inhibits family migration), and others illuminate policy-relevant issues (such as how a negative income tax might affect migration) not

investigated before because the appropriate data were not available. The main findings of this study are that:

- Household-level unemployment or dissatisfaction with a job does "push" a family to move; families whose heads are unemployed or are dissatisfied with their jobs (employed, but looking for a different job) are more likely to move than those whose heads are not searching for another job. Recent arrivals to an area who cannot find acceptable employment are especially prone to move again.
- Local economic conditions (origin unemployment rates) *do* affect outmigration, but only within the subset of people most seriously affected--the unemployed.
- Unemployed persons and others looking for work are more responsive to such economic determinants as family income, origin wage rates, and expected earnings increases than persons apparently satisfied with their jobs.
- Families are much more likely to move in a given period if they moved in the recent past, primarily because of a strong tendency for people to return to places they have recently left; the majority of repeat migrants in the one-year period considered here (1971-72) are return migrants. Recent arrivals who are unable to find acceptable employment are especially likely to move again and to return to places where they have lived before.
- Families who have moved several times previously are more likely to move again than are families who made one or no recent moves *if* those multiple moves were nonreturn moves; families who made multiple moves that concluded with a return to a place lived in previously are, in some cases, no more likely to move (again) than families who have not moved at all, thus bringing into question the prediction of high subsequent migration propensities for this subset of "chronic" movers. (This study underscores the importance of using longitudinal data to study "chronic" mobility: since many return and repeat moves occur within a few years of the initial move they follow, census data,

which define return and repeat mobility by comparing places of residence at birth, five years before the census, and date of the census, seriously understate the importance of both phenomena.)

- Wives are not passive, secondary migrants, but rather appear to have a significant influence on the family's decision whether to move and where. Even though we have less detailed information on wives' than on husbands' characteristics, those of the wife (hours of work, share of earnings, wage rate, etc.) add significantly to the power of equations explaining whether a family moves. Furthermore, we find that, contrary to the results of several recent studies, families with working wives are not necessarily less likely to move than are families with nonworking wives, other things being the same. Also, families that move tend to select destinations where both the husbands' *and wives'* earnings are highest. Compared to destinations not selected, chosen destinations are characterized by higher husbands' and wives' earnings gains and also by a larger contribution of the wife's gain to the total family gain.
- Age and education, typically found to be among the strongest correlates of the propensity to migrate, appear to be relatively unimportant in explaining the migration of married couples when other migration determinants, many of which vary with age and education, are held constant.

Several of the findings of this research have important policy implications:

- Since unemployed persons, especially those living in depressed labor markets, are already more likely to move than are those who are not looking for work, it may not be necessary to instigate policies facilitating migration for a group already induced to leave. Such policies may merely provide a costly duplication of the already effective influence of private market forces.

- Since unemployed persons appear to respond to local unemployment rates in deciding whether to leave an area, policies of investment to expand economic opportunities in depressed areas are likely to help prevent economically forced outmigration.
- An increase in family income is estimated to reduce the probability that a family whose head is unemployed will migrate; apparently, staying rather than moving is a normal good for this group. Thus, unless the receipt of an income bonus is conditional upon its being used to help defray costs of moving, income supplements given to the unemployed may be used to subsidize their staying in their current location rather than to finance job search in other labor markets.

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I. INTRODUCTION

Geographic mobility is the means by which human resources can move to their highest valued use. Classical models of resource allocation assumed that resources moved costlessly and instantaneously, with perfect information, to the place where they were valued most highly. But information is not perfect nor migration costless. In addition to direct outlays for transportation and moving of belongings and costs of learning about alternative destinations, migrants incur a number of other costs--for example, wages foregone (opportunity costs) while moving and looking for new jobs and losses of location-specific assets such as friendships or clientele. Thus, migration will at best equalize real incomes across geographic areas up to a differential compensating for its cost. But does migration work efficiently? Does it transfer resources from locations where they are not fully employed or not most highly valued to places where they can make their most valuable contribution?*

WHAT PREVIOUS RESEARCH TELLS US ABOUT THE EFFICIENCY OF MIGRATION

Available evidence is mixed. Most studies show that migration is generally in the direction of higher wages (e.g., DaVanzo, 1972); however, there is always a substantial "counterstream" of migration in the opposite (seemingly "wrong") direction. Although some (e.g., Sjaastad, 1962) have argued that this may be due to aggregation bias, evidence presented here and elsewhere (e.g., Morrison, 1976) indicates that the amount of return migration (moves back to places where people lived before) is substantial, and is considerably more important than is indicated in statistics based on census data.** Are these return moves

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*Private and social returns are implicitly assumed to be the same. A consideration of possible differences is beyond the scope of this study. The model presented here deals with the *determinants* of the migration of individual families and does not directly consider the consequences.

**Studies using census data define a return move as a move made in a five-year period back to a person's place of birth. I show in this efficiently reallocating resources to their highest valued uses? If so, were the initial moves efficient or only intended to be temporary? Or is the very fact of a return move often an indication that the initial move did not live up to expectations? Return moves after unsuccessful initial moves are especially costly, since additional resources must be devoted to "undoing" the first move.*

Studies of the relationship between migration and unemployment also report mixed results. Some surveys (e.g., Saben, 1964; Lansing and Mueller, 1967) have shown that unemployed men are more likely to migrate than those who are employed, but these studies do not use adequate controls for other characteristics that may be affecting migration, so the direct contribution of unemployment cannot be determined. Studies that have used aggregate data to assess the relationship between unemployment and migration suffer from a number of methodological problems--e.g., potential simultaneity biases--that make their results suspect. In addition, with aggregate data it is impossible to determine whether a positive estimated relationship between outmigration and the origin unemployment rate is because unemployed persons are more likely to move, or because people are more likely to leave areas with high unemployment rates regardless of their own employment status. Below I report results that enable us to disentangle these two possible effects.

Furthermore, Mincer (1976) has shown that the fact that members of a family usually move together may cause migration to be less efficient than it would be if husbands and wives each moved independently. When members of a family move together and base their decisions on *family* costs and benefits, as preliminary empirical evidence implies they do (e.g., DaVanzo, 1972), one spouse may become a "tied stayer" or a "tied mover," or one or both may move to a destination that is nonoptimal

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report that many return moves are made within two or three years of leaving the place being returned to and, thus, may not appear in census figures.

*Human capital investments other than migration typically do not require an outlay of funds to return to the pre-investment state. For example, if a certain type of training turns out to have a negative return, the investor does not have to incur additional costs if he chooses *not* to use the acquired skills, although, of course, the initial costs are sunk.

from the individual's viewpoint, if the implication of the family decisionmaking calculus is different from those of the comparisons of the individual spouses' costs and benefits.

POLICY RELEVANCE

It is important to determine whether private incentives alone are sufficient to assure that geographic mobility allocates human resources efficiently. By understanding where the private market performs best and where it works worst, we can suggest complementary public policies that will enable the migration process to work more efficiently by encouraging moves whose social and private returns exceed their costs while discouraging those whose net returns are negative. By understanding where the private market already promotes optimal behavior, we can avoid costly duplication.

Many different types of public policies may affect geographic mobility. Some, such as relocation assistance grants, are designed to influence migration directly by helping people move to available jobs. Others, such as public employment, work incentive, income maintenance, or unemployment insurance programs, minimum wage laws, and the Equal Rights Amendment, are not designed to affect migration but may inadvertently do so by modifying the costs and benefits of geographic mobility. Since many policies of the latter kind have received serious consideration by legislators and policymakers, it is important that their "side effects" on geographic mobility be estimated. It is essential that we anticipate all the avenues of influence--both direct and indirect--of a particular policy so that we can assess its overall impact and alert policymakers to any unintended influence.

PURPOSE OF THIS REPORT

In this report I estimate a migration model that, I believe, is more appropriate than previous models for determining the degree of efficiency of geographic mobility and for assessing how various public policies might affect migration flows. Because members of a family usually move together, the model proposed here views the wife's as well as the husband's characteristics and opportunities as affecting the family's migration decision. Focusing only on the husband, as many studies have done, and ignoring other family members can result in seriously biased estimates of policy impact, especially for programs aimed at the family, such as a Family Assistance Plan. The empirical sample is restricted to families, since it is the family interactions (overlooked in most migration studies because of data limitations) that are the focus of this study.

The model estimated here enables us to determine the effect on migration of policies that could directly affect one or more of the explanatory variables. For example, by estimating the relationship between migration and family nonwage income, we can determine the potential effect on migration of a policy that would change families' incomes (such as an income maintenance or relocation bonus program). In addition, the analysis includes variables such as employment status that may not be directly manipulable by public policy but that should indicate the types of people who are most or least prone to move. A comparison of these groups with the target groups of policy interest will indicate where policy effort could be most (and least) effectively applied.

The empirical work is based on household-level, longitudinal data from the Income Dynamics Panel (IDP) at the University of Michigan. Special attention is given to the economic determinants of migration, to the way that recent migration experience affects subsequent migration decisions, and to family interactions--the effects on family migration of both the husband's and the wife's characteristics and opportunities.

The empirical analysis contains two methodological features new to migration research:

1. The wage rates that could be earned in each potential destination are estimated for both the husband and the wife, based on their personal characteristics. These are imputed from wage equations estimated separately for each potential destination area.
2. Choice of destination is analyzed for migrants. Although

destination choice has sometimes been modeled in studies using aggregate data, it has never, to my knowledge, been considered in migration studies using household data.[*]

To incorporate these two methodological features, the geographic units of analysis must be defined so that each of them is fairly large (to supply sufficient sample sizes for the estimation of area wage equations) and that the number of them is fairly small (so that the number of alternatives for the choice of destination analysis is empirically manageable). These two considerations led to the use of the nine census divisions as the main geographic units for this study; a family is considered to have migrated if it lived in a different division in one year than in the previous year. Unfortunately, such a definition of migration results in a small number of migrants. Because of this, equations are also estimated to explain migration to noncontiguous states, interstate migration, migration to noncontiguous counties, intercounty migration, as well as all moves (including intracounty) and plans to move.[**]

The report is organized as follows: Section II contains the underlying conceptual framework and some general hypotheses derived from it. Section III previews the empirical analysis with a discussion of the data, sample, estimation techniques, and definitions of variables. In Sec. IV specific hypotheses explaining whether or not a family migrates are proposed and tested. The choice of destination analysis is presented in Sec. V. The report concludes, in Sec. VI, with a summary of the main findings, a discussion of the policy implications of the research, and suggestions for further research.

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[*] Friedman (1975) uses micro data to analyze households' distribution (though not explicitly changes) among residential locations in the San Francisco Bay area.

[**] Choice of destination is not analyzed for these shorter distance moves and the potential destination wages are not considered as explanatory variables.

II. CONCEPTUAL FRAMEWORK

MIGRATION AS A FAMILY INVESTMENT IN HUMAN CAPITAL

Our conceptual framework is an adaptation of the human capital theory of migration (Sjaastad, 1962; Schwartz, 1968, 1976; Bowles, 1970; O'Neill, 1970; DaVanzo, 1972) to the family level (DaVanzo, 1972; Mincer, 1976). That is, we view migration as an investment that is undertaken if the expected present value of benefits exceeds costs and define the benefits and costs to be those relevant to the family.

The family is the unit of analysis here because members of a family usually move together. The family is hypothesized to move if the net return to the family--the sum of the returns to various family members less family costs--is positive, and to choose the destination where the net present value is largest. As discussed below, this decision rule may imply different migration outcomes than if individual family members were to base their decisions only on their personal costs and benefits.*

Positive benefits to migration include increases in real wages, as well as nonwage and nonpecuniary returns (e.g., higher welfare payments or a more pleasant climate). Costs (negative benefits) include (1) direct costs (actual outlays for transportation and moving of belongings), (2) information costs, (3) psychic costs, (4) opportunity costs (earnings foregone) while moving and looking for a new job, (5) decrease in the value or loss of location-specific capital (e.g., friendships, seniority in one's job, own home), costs of disposing of such assets (e.g., selling a home), and costs of attempting to maintain their value (e.g., keeping in contact with friends and relatives left behind in the area of origin), and (6) financing costs. In this section we briefly discuss each of these conceptual categories. These various costs and returns are not directly observable, but each is related to a number of measurable variables which may in turn affect migration. The detailed discussion of the transition from theoretical to measurable variables is deferred to Sec. IV.

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*In fact, Mincer (1976) shows theoretically that there may be cases where the difference to a particular spouse between the optimal family decision and the optimal individual decision may be so great that it exceeds the gains from marriage, leading to marital breakup. In the empirical work to follow, the sample has been restricted to couples whose marriages were intact both before and after migration. We can thus concentrate on the familial aspects of migration without worrying about whether these or other factors were responsible for any marital disruptions during the period of interest.

The human capital view of migration decisions can be expressed formally as a statement that a family will migrate if

$$\sum_{t=0}^{T} \frac{Y_{jt}}{(1+r)^t} - \sum_{t=0}^{T} \frac{Y_{it}}{(1+r)^t} - \sum_{t=0}^{T} \frac{C_{ijt}}{(1+r)^t} > 0 \qquad \text{for some } j \neq i$$

where Y_{jt} = expected family real income (wage, nonwage, and nonpecuniary) that would be received at destination j in period t,

Y_{it} = real income at origin i (premigration location),

C_{ijt} = cost of moving from i to j,

T = number of lifetime periods remaining, and

r = discount rate.

The family is hypothesized to choose that j where this value is greatest.[*] The first term is the present value of the expected real income stream that would be received if the family moved to destination j; the second is the real income stream that would be received if no move were made; the last term is the cost of moving from i to j. C is assumed to incorporate direct (out-of-pocket) costs of moving, as well as search, transactions, revisit, and financing costs. Opportunity and psychic costs are included in the Y terms.

The exact values of the parameters of this decision problem (Y_i, Y_j, C_{ij}, T) are unknown at the time the decision is made; decisions are based on their *expected* values.

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[*] Alternatively, one could say that the family maximizes, through choice of j, the above function. j = i (staying) is one possible solution; when j = i, the function equals 0.

Migration should not be viewed as a once and for all decision. Expected values of the relevant parameters may change over time. A family that chose not to move in period 0 will reevaluate in period 1 and could decide at that time that migration appears to be a worthwhile investment.* A family that moved between period 0 and period 1 will act as if it evaluated, in each following period, its expected net gain to *subsequent* migration based on its situation in its new locality. If the first move did not live up to expectations, this family may choose to move again, possibly returning to the area where it lived before.**

ORIGIN AND DESTINATION EARNINGS: RETURNS AND OPPORTUNITY COSTS***

An expected increase in real earnings is one of the primary motivations behind most families' migration. For a given cost of moving, a family is more likely to move the higher the present value of earnings that could be received if it moved, $PV(E_j)$, and the smaller the present value of the earnings stream it expects to receive if it does not move, $PV(E_i)$. $PV(E_i)$ can be viewed as the opportunity cost of moving, $PV(E_j)$ as the opportunity cost of *not* moving. Since earnings are the product of hours worked and the wage rate, we expect the following relationships:

Other things the same, a person will be more likely to move:

- The lower the wage rates he would earn at origin if he did not move (W_{it}),
- The fewer number of hours he would work at origin (H_{it}),

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* Even without any unforeseen changes, the family may have decided in period 0 that it should wait until period 1 to move. For example, i may be the cost-effective place to make an investment in a particular type of human capital which is known to be most highly valued at j.

** In the empirical work we are unable to observe future wage streams and how expectations about these might change over time. Thus we empirically model migration as if it were a once and for all decision.

*** For simplicity, the discussion in this subsection deals with a single-person household and assumes that all income is earned income and that utility is associated with earnings rather than with hours of work. The implications of extending the analysis to multi-person households and to include nonwage income are considered below.

- The higher the wage rates he would earn if he moved (W_{jt}),
- The greater the number of hours he would work if he moved (H_{jt}),
- The greater the number of years, T, over which he could receive a positive gain, $E_j - E_i$.

Thus, other things the same, a person who is unemployed or underemployed at i and/or expects to be so in the future is more likely to leave i than one who expects steady work if he stays at i. A person who has a job lined up at j beforehand and expects to lose no work time when he moves should be more likely to move than one who does not have an immediate job prospect and expects to have to spend a substantial period of time searching for an acceptable job in the new location. The earnings foregone while moving and searching for work are an opportunity cost of moving. The higher the wage rate that could have been earned at origin if no move were made, the higher the cost of moving to search for work. This opportunity cost effect of higher wages will be weaker the fewer the number of hours by which that wage rate is multiplied. Thus the opportunity cost of a high origin wage rate potentially foregone while searching for work at destination will be weaker for a person who would have been unemployed or underemployed had he not moved than for a person who would be giving up a full-time job.

FAMILY CONSIDERATIONS

For married couples the relevant earnings variables are family earnings--the sum of the husband's and wife's earnings; costs are those relevant to the family unit. If one spouse, say the wife, does not work and never plans to, and if family costs do not differ from the husband's costs, then the migration decision for such a family will be the same as the husband's decision were he not married.[*] If family costs of moving exceed the husband's costs, as is likely (especially when there are children), some husbands who would have moved as individuals may not move in families. In families where the wife works now or may in the future, the potential change in her earnings may also affect the family's migration decision. If the family's migration cost equals the sum of the husband's and wife's costs (no economies or diseconomies of scale) and the husband's and wife's maximum net present values (where a value of zero for staying is a possible solution) occur in the same location, the family decision regarding whether to move and where will be identical to the decisions the husband and wife would each make acting alone. If there are economies (or diseconomies) of scale in moving costs, husbands and wives in such a situation will each be more (or less) likely to move being married than they would as individuals acting alone.

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[*] We are still assuming real income to consist only of earned income. A crucial assumption of this model is that families maximize family utility rather than, say, the husband's or wife's utility alone, and that an increase in the husband's (or wife's) utility increases family utility.

However, even if there are no economies or diseconomies of scale in moving costs, husbands and wives may make different decisions as tied partners in a marriage than they would as individuals acting alone. This will be the case when the husband's and wife's best alternatives do not lie in the same location. For example, if the husband's maximum net present value is in destination j* and the wife's maximum net present value is zero, the husband would move acting alone but the wife would stay. If the absolute value of the husband's net gain from moving to j* exceeds the absolute value of the wife's net loss of moving to j*, the family's net present value associated with j* will be positive and the family will choose to move. In such a case the wife is, in Mincer's (1976) words, a "tied mover."[*] However, the family may not move to j*. Rather, it will choose the destination where the *family* net gain--the sum of the husband's and wife's net gains--is maximized.

NONWAGE INCOME, LOCATION-SPECIFIC CAPITAL, AND OTHER MIGRATION COSTS

In addition to earnings, family income may include nonwage and nonpecuniary components. Important for migration decisions are those components whose value would change if a move were made. For example, one area may offer higher welfare benefits than another, or the family may own certain location-specific assets, such as a business or professional practice, which are more valuable in the current location than in other locations; other examples include seniority in one's job, a nonvested pension, or the real income received by being near friends and relatives. Efforts to maintain the value of such assets may be costly, e.g., visiting friends and relatives left behind, whereas disposing of them and replacing them, e.g., selling one's house, may entail transactions costs. These are additional potential costs of migration. If a family recently moved from j to i, it may still have some location-specific capital at j, e.g., friends and relatives, job-market information. Other things the same, the higher the value of location-specific assets at j relative to i, the more likely such a family is to return to j.

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[*] Alternatively, if the wife's net gain at j* is positive but is "dominated" by negative gains of her husband that are larger in absolute value, she would be a "tied stayer." Either spouse can be the tied partner. The spouse whose return to migration is smaller in absolute value than his partner's return is the potential tied mover (stayer). Because wives usually work less over their lifetimes than husbands, they are more likely to be the tied partners.

We have discussed opportunity costs and potential costs associated with location-specific assets. In addition, there will be direct costs --outlays for transportation and moving of belongings--and information costs of learning about opportunities in alternative destinations.[*] Potential migrants may visit particular places in an effort to amass more information about them. Although each potential destination has a non-zero (though perhaps very small) probability of being chosen, the family will only invest in search to obtain (more) information about a potential destination if it expects the return from this information search to exceed the cost.

FINANCING THE MIGRATION INVESTMENT

A family will invest in migration only if the expected rate of return on the investment exceeds the marginal financing cost; that is, the family will move only if it believes migration is the best investment for its money. Because migration investments, like those in other types of human capital, are risky and illiquid, it is difficult to borrow in the capital market to finance them;[*] many families may be able to borrow from themselves, out of past savings or foregone current consumption, at lower rates of interest than are available in the capital market.[**] Borrowing rates, both external and internal, will tend to be inversely related to the size of family savings, current income, and wealth (DaVanzo, 1972).

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[*] The employer may cover some of the direct and information costs for certain professional jobs, but this is very unlikely for less skilled workers.

WHAT LIES AHEAD

Although none of the costs and benefits discussed in this section is directly observable in available data, each is related to one or more measurable variables that may, in turn, affect family migration decisions. The goal of empirical research is to construct variables to measure or proxy the conceptual variables suggested by theory. This is the topic of the next three sections of this report.

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[*] The expected return on a human capital investment is not acceptable collateral because the lender cannot legally gain control of the asset producing the return. Local lenders will be especially reluctant to lend to investors in migration because the loan is requested for the very purpose of helping the borrower move away from the lender. And because the investment is lumpy and only one alternative can be pursued at a time, the investor cannot diversify his commitments within this type of activity to reduce risk (Schultz, 1976).

[**] The fact that individuals value the investment more highly than does the market is in part a reflection of their greater ("inside") information about their potential gains from the move, as well as the institutional constraints noted in the preceding footnote.

III. A PREVIEW OF THE EMPIRICAL ANALYSES: DATA, SAMPLE, ESTIMATION TECHNIQUE, AND DEFINITIONS OF VARIABLES

DATA

The model is estimated using household-level, longitudinal data from the Income Dynamics Panel (IDP). The Panel Study of Family Income Dynamics is an ongoing, longitudinal survey of approximately 5000 families which is being conducted by the Survey Research Center, Institute for Social Research, University of Michigan. Surveying began in 1968 and the same families have been resurveyed annually. The data file used for the analysis reported here contained data from the first five waves of the study--1968-72. Such data are more appropriate for an analysis of family migration than the aggregate census data so often used in the past for a number of reasons:

1. The IDP data allow us to examine family behavior--the influence of (and interaction between) husbands' and wives' characteristics on the couple's decision to migrate. In the past, studies have tended to rely on data on areas (and the *groups* of persons who reside there), or have used individual-level (rather than household-level) data, such as the Social Security Continuous Work History, in which no information was collected about the respondent's spouse. As shown below, household-level data greatly enhance our ability to explain *family* migration decisions.

2. Individual-level data enable us to distinguish between (a) the characteristics of individual migrants (before they move) and of their counterparts who remain in a particular origin area and (b) the average (premigration) characteristics of the population in that area. Hence, we can identify the separate effects of a particular individual characteristic, say, employment status, from the effect of the average characteristic of all persons in the area, e.g., the area's unemployment rate. In addition, we are able to consider the interaction: Are unemployed individuals more likely to leave areas with high unemployment rates? Does the area unemployment rate have any effect on the migration decisions of persons who are not looking for work?

3. Longitudinal data enable us to look at the effect of an individual's *premigration* characteristics on his subsequent migration decisions, obviating the problem of disentangling cause and effect in the relationship between migration and an "explanatory variable" measured after migration has occurred. For example, individual or area unemployment measured at the end of the migration period (as is common in the census) may have been affected by migration during that period.

4. Since the data have been collected annually, we can consider a one-year migration interval and multiple movement. This is an important improvement over the 5- or 10-year census frame of reference in which a series of moves or self-cancelling return moves within a five-year period go unmeasured. We will see below that the number of such repeat and return moves is substantial. Longitudinal data permit an investigation of the effects of *actual past* migration decisions (whether a move was made, when, from where to where, and employment status after moving) on subsequent decisions regarding whether to move and where. Studies using aggregate data usually attempt to estimate such effects by looking at the (partial) relationship between the in- and outmigration rate, often both defined over the same time period and hence simultaneously determined (e.g., Greenwood, 1975b).

5. The IDP data contain more detailed information than does the census on personal and economic characteristics, including the husband's and wife's wages and hours of work, the couple's assets, and other income, as well as information on location-specific assets such as home ownership, business ownership, presence of friends and other relatives, and husband's years in current job.* Such detailed information enables us to better measure variables of policy interest--for example, to construct an income measure that can tell us the expected migration response to an income supplement or a relocation bonus**--as well as to control for other potentially important determinants of migration.

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*Longitudinal data also enable us to consider the effects on migration of previous changes in certain family characteristics over time. This is not done in the current study, but provided interesting results in Goodman's (1976b) analysis of intracounty mobility.

**Studies using aggregate data often employ average male or female total income to measure both income and wage effects (e.g., DaVanzo,

6. The dependent variable can be measured more exactly with micro data. The underlying models concern the probability that an individual or family will move from place i to place j. With micro data, this can be expressed by a dichotomous or a polychotomous dependent variable, and we can avoid the problem of appropriately defining the numerator and/or denominator sometimes encountered when aggregate data are used, as noted in DaVanzo (1976b).*

A number of other studies have also used longitudinal micro data to analyze migration (e.g., Morrison, 1971; Kaluzny, 1975; Roistacher, 1975; Duncan and Newman, 1975; and Polachek and Horvath, 1976); in fact, the last four studies also used the Income Dynamics Panel data. However, those studies focus on the effects of various personal and family characteristics on whether or not a move was made, to the exclusion of other important factors tied to places rather than people. In the present study, choice of destination is also explained, and origin and destination *place* characteristics, as well as a measure of potential migrants' "opportunities" at each possible destination, are considered as potential determinants of migration decisions and destination choice. In addition, more attention is given here to policy-relevant labor market explanatory variables (such as wage rates, composition of income, and unemployment) and to the relative importance of the husband's and wife's characteristics.

SAMPLE

The sample for this study consists of 1952 white couples living in the United States whose marriages were intact in 1971 and 1972. The sample has been restricted to married couples because our focus is on the family decisionmaking aspects of migration--the effects of both

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1972, Greenwood, 1975b) and are unable to separate the income and substitution effects of the various components of this income.

*There are also some disadvantages to using longitudinal micro-level data to study migration. In particular, the samples often include only a small number of movers. However, the more years over which the data are collected, the larger the number of people who move within the survey period.

the husband's and wife's characteristics and opportunities.[*] The analysis was restricted to whites because other studies (e.g., DaVanzo, 1972) have shown that the coefficients of migration equations (and wage equations) differ significantly by race.[**]

The basic migration equation is estimated for this total sample and for two subsamples. The larger subsample, which contains 1605 families, excludes those whose head is a student, retired, or in the armed forces, on the grounds that these excluded families are responding to different factors in making their migration decisions than are the prime-age, civilian group to which the study's hypotheses more directly pertain. The smaller subsample of 347 families is made up of all those excluded from the larger subsample.[***] Because the coefficients' vectors differ significantly for the two subsamples and because the larger subsample is the one most relevant to drawing policy implications, most of the subsequent empirical work focuses on the group of 1605 families with civilian, nonstudent heads who have not yet retired.

ESTIMATION TECHNIQUES

The model in Sec. II seeks to explain why people move and how they choose among alternative destinations. These two choices are not made independently. Characteristics of the destinations affect the choice among them as well as the decision whether to move at all. In the theoretical model, families are viewed as potentially considering each labor market, including the one in which they currently reside (no migration), as a possible destination (although they will only invest in search to obtain information about a potential destination if they expect the returns from this information search to exceed the costs). But for empirical research into the determinants of migration and destination choice, we must somehow reduce the number of possibilities to an empirically manageable level. This consideration has led to the choice of the nine census divisions as the geographic units for this study.[*] (Because census divisions are large and heterogeneous and relatively few people move between them, certain parts of the model are also estimated for migration variables defined with respect to smaller geographic units, as discussed below.)

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[*] It would have been interesting for comparative purposes to analyze the migration of individuals not married at the time of the 1971 or 1972 surveys, but time and resource limitations did not permit this. Modeling the migration of such a group introduces different considerations because a number of them changed their marital status in the period under consideration; the decision to marry or divorce is likely to be jointly determined with a decision to migrate.

[**] The number of nonwhite families in the IDP data was too small to support a separate analysis.

[***] The small sizes of the samples preclude any further sample restriction or stratification by other important characteristics such as age or education, although these are controlled through explanatory variables.

In the conceptual framework, whether a family migrates is determined by the costs and benefits associated with moving to each possible destination. The derived empirical model of this choice among many alternatives would view each family in the sample as weighing the characteristics of the nine alternatives (staying in i or moving to each of the eight $j \neq i$). However, specifying and estimating such a model would be quite complicated and costly computationally. To simplify matters here, the whether to migrate and choice of destination decisions are considered separately. Choice of destination is conditional on the fact that a move was made; a sample of migrants only is used for this analysis. For the whether to migrate analysis, explanatory variables are defined to indicate the costs and benefits of migration in general. Various types of costs and benefits associated with each alternative are combined across alternatives into summary indicators. For costs not likely to vary much among alternatives, e.g., those associated with selling a home, this should cause no problem. Variables that should be destination-specific, e.g., the present value of wage differences, have been combined into summary measures, e.g., the maximum benefit/cost ratio, that should indicate whether or not migration is likely to be a profitable investment for a particular family. Other variables, such as previous migration, are hypothesized to affect the propensity to migrate in general and can also be viewed as summary indicators of whether the family has places to which it could potentially return. While such an approach may miss some potentially important interactions that may affect migration decisions, e.g., how opportunity cost or financing effects vary with distance or the tradeoff between destination unemployment rates and wages, it should still indicate which families are most likely to move and should provide useful groundwork for further research into the influence of the vectors of costs and benefits associated with each potential destination.

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[*] The estimation of separate wage equations for each potential destination also led to this choice of geographic unit.

For the whether to migrate analysis, the dependent variable is a zero-one dummy indicating whether or not a move was made.[*] Most of the equations are estimated by ordinary least squares (OLS), but for comparison one of the key equations is also estimated by probit, a maximum likelihood, nonlinear technique that is more appropriate but considerably more costly computationally;[**] the implications of the probit equation are quite similar to those of the OLS equation.[*] Thus we can feel fairly confident that the other OLS equations in this report, which were not also estimated by probit for cost reasons, are correctly distinguishing important from unimportant factors and indicating whether a particular explanatory variable has had a positive or negative relationship with migration, even though we can perhaps be less confident in assessing the size of that relationship.

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[*] More details on the definition are provided in the next subsection.

[**] When the dependent variable is dichotomous, OLS, the statistical method most commonly used in economics and demography, produces unbiased estimates, but they will be inefficient (because of heteroskedasticity) and may yield predictions outside the zero-one range. In addition, because the true relationship must be nonlinear (it cannot extend beyond the zero-one range), a linear specification will suffer from specification bias (Nerlove and Press, 1973). Furthermore, the fitted relationship will be sensitive to the location of the explanatory variables and the usual tests of significance do not apply because the estimates of the standard errors and R^2 are not consistent, generally. These problems are more serious when the mean probability is very small (or large), as is the case here, but some of them cause less difficulty as the sample size increases or when the explanatory variables are normally distributed. For example, Smith and Cicchetti (1972) show that the absolute size of the bias in the variance estimates declines with increasing sample size. Goodman (1976a) points out that "for large samples, any coefficient large enough to be of substantive significance is likely to be of statistical significance as well, so precise estimates of standard errors are not crucial." Furthermore, he notes that even though the dependent variable, y, is not normally distributed, the Central Limit Theorem can be employed to show that as the sample size increases, the distribution of the estimated parameter, $\hat{\beta}$, becomes normal, and t tests can be safely used. Haggstrom (1974) notes that the coefficients of the discriminant function, a statistical method for classifying observations into two or more groups, are linear transformations of the OLS coefficients and can be used to estimate logit parameters, and that the OLS t- and F-statistics have exact t and F distributions if the explanatory variables have a multivariate normal

The choice of destination equations have been estimated by McFadden's conditional maximum likelihood polychotomous logit technique (McFadden, 1973). This technique extends dichotomous logit analysis to the case where the dependent variable is polychotomous.[**]

DEPENDENT VARIABLES--TYPES OF MIGRATION ANALYZED

The dependent variables are dummies that indicate whether or not the family moved between 1971 and 1972 and are defined by comparing residence information for the last two years of the five-year (1968-72) IDP file in order to maximize the number of years over which independent variables referring to previous migration could be defined.

As noted in the introduction, two features of the methodology used here--estimating wages that could be earned in each potential destination and analyzing choice of destination for migrants--have led to the choice of census division as the most appropriate geographic unit for defining migration for this study. However, because this results in

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distribution, and these statistics appear to be fairly robust in nonnormal situations.

Thus, in spite of their well-known problems when the dependent variable is dichotomous, OLS regressions are still likely to indicate which explanatory variables are important and which are unimportant in influencing migration decisions. Because it is considerably cheaper computationally than the "more correct" nonlinear maximum likelihood techniques (which have nice large sample properties but whose small sample properties are uncertain), OLS has been used to estimate most of the equations in this report.

[*] There are a few cases where the signs of the OLS and probit coefficients differ, but typically these are for dummies whose cell sizes are small and whose coefficients are not significant at 5 percent in either the OLS or probit results.

[**] The multiple choice generalization of the probit model is intractable computationally (McFadden, 1973, p. 66).

a small number of migrants,[*] the model has also been estimated, without these two methodological features, for other definitions of migration or mobility, corresponding to different geographic units:

Type of Migration	Total Number of Migrants	Number of Migrants in Large Subsample[a]
1. Interdivisional migration[b]	43	21
2. Migration to noncontiguous states	45	21
3. Interstate migration	54	29
4. Migration to a noncontiguous county	74	46
5. Intercounty migration	97	65
6. Moves to a different residence	344	278
7. Family head thinks he will move for job-related reasons	160	122

[a] The United States is divided into nine census divisions.

[b] The large subsample excludes families with heads who are retired, students, or in the military.

In general, each category is included in the ones listed below it. For example, all interdivisional migrants were interstate and intercounty migrants (although it is possible that they did not move to a *noncontiguous* state or county), and all moved to a new residence. As we go down the list, the distance moved becomes shorter on average.

Equations have been estimated explaining each of these dependent variables. Whenever possible, the explanatory variables are defined for the same geographic unit as the dependent variable--e.g., average divisional, state, and county unemployment rates. The same specification is used for each dependent variable to facilitate comparison.* In addition, equations explaining plans to move are estimated to determine the differential effects of various explanatory variables on the intention and the actuality of migration.

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[*] However, not only the number of migrants is important; nonmigrants, who are very adequately represented here, provide indispensable information on the characteristics of persons who choose *not* to move. Furthermore, although the number of migrants in this study is small, there is no a priori reason to suspect that they are atypical of migrants in general; in any one-year period, the proportion of people who move is small and there is no reason to believe that we do not have a representative sample of this group.

EXPLANATORY VARIABLES

The explanatory variables are defined in Table 1. The particular concepts they are measuring and the rationale behind their construction are discussed in the next two sections of this report.

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*The main exception is the present value measures, which appear in the divisional regressions but not in the others.

Since the primary interest here is in explaining intercounty and longer moves, some variables that may influence residential mobility (e.g., adequacy of housing, neighborhood characteristics) are not considered. The noncontiguous state and county migration variables insure us against counting very short border-crossing moves that may be for residential purposes only. The residential mobility equations are presented only for comparison. For a more thorough analysis of intracounty residential mobility using the IDP data, see Goodman (1976b).

Table 1

DEFINITION OF VARIABLES IN TABLES 2 THROUGH 8

Whether to Migrate Regressions

Dependent Variables

Interdivisional Migration	A dummy that equals one if the family resided in a different census division in 1972 than in 1971, zero otherwise.
Migration to Noncontiguous States	A dummy that equals one if the family resided in a different state in 1972 than in 1971, and the 1972 state was not contiguous to the 1971 state.
Interstate Migration	A dummy that equals one if the family resided in a different state in 1972 than in 1971.
Migration to Noncontiguous Counties	A dummy that equals one if the family resided in a different county in 1972 than in 1971, and the 1972 county was not contiguous to the 1971 county.
Intercounty Migration	A dummy that equals one if the family resided in a different county in 1972 than in 1971.
All Moves	A dummy that equals one if the family lived in a different residence in 1972 than in 1971.
Plans to Move for Job-Related Reasons	A dummy that equals one if the family head thinks he will move in the near future for job-related reasons (e.g., to take another job, to be nearer to work).

Explanatory Variables

(See Sec. IV [page numbers in parentheses] for more information about the construction of these explanatory variables and the conceptual variables they are intended to measure. Except where specified otherwise, status is at the time of the 1971 survey.)

Labor Force Status (p. 35)	
Student	A dummy variable that equals one if the husband is a full-time student.
Retired	A dummy variable that equals one if the husband is retired.
Military	A dummy variable that equals one if the husband is in the armed forces.

Table 1 (Cont.)

Employment Status (pp. 36-42)

JLK-U	A dummy variable that equals one if the husband is looking for a job *and* is unemployed.
JLK-E	A dummy variable that equals one if the husband is employed but is looking for another job.
JLK-Oth	A dummy variable that equals one if the husband is retired or a student and is looking for work.
NOLK-E	A dummy variable (used in interactions) that equals one if the husband is employed and not looking for a different job.
NOLK-Oth	A dummy variable (used in interactions) that equals one if the husband is not in the labor force (retired or a student) and not looking for work.
NOLK	A dummy variable (used in interactions) that equals one if the husband is not looking for work (= 1 - [JLK-U + JLK-E + JLK-Oth] = NOLK-E + NOLK-Oth).
Unempl. Rt.	The average divisional (state, county) unemployment rate in 1971.

Returns to Migration (pp. 42-49)

PV^{fam}	Present value of the earnings difference available to the family if it migrates interdivisionally (in \$1000s) (used only in interdivisional migration equations) = maximum family benefit/cost ratio (see footnote 4 on p. 46).

Composition of Family Income: Nonwage Income, Wages, Hours, and Wife's Share (pp. 50-64)

Nonwg. Inc.	Family nonwage, nonlocation-specific income in 1970, in \$1000s, adjusted for cost of living = rent, interest, and dividends + transfer payment income + other nonwage income + imputed return on automobiles = family income (defined below) - husband's earnings - wife's earnings - business, farm, and professional income - imputed return on house.
Fam. Inc.	(Used only in Table 4.) Family income in \$1000s deflated by divisional cost of living index; family income = husband's earnings

Table 1 (Cont.)

Fam. Inc. (cont.)	+ wife's earnings + rent, interest, and dividends + other asset income + family transfer payment income + other income received by the husband, wife, or other family members + imputed return on the house and automobiles owned by the family.
Wg^w	The wife's hourly wage rate adjusted by the cost of living index.[a]
Wg^h	The husband's hourly wage rate adjusted by the cost of living index.[a]
Hrs/yr^w	Number of hours worked by the wife in 1970, in 1000s.
Wife's Earnings Share	$= \dfrac{Wg_1^w \cdot Hrs/yr_1^w}{Wg_1^w \cdot Hrs/yr_1^w + Wg_1^h \cdot Hrs/yr_1^h}$ where Hrs/yr^h = number of hours worked by husband in 1970, in 1000s.
Wife's $Share^2$	= (Wife Earnings $Share)^2$
Location-Specific Assets (pp. 64-66)	
Own house	A dummy variable that equals one if the family owns its house.
Relatives nearby	A dummy variable that equals one if the family has relatives living within walking distance of its current (1971) residence.
Occ^h = Prof.	A dummy variable that equals one if the husband's occupation is professional, technical, or kindred worker.
Ind^h = Educ. or Med.	A dummy variable that equals one if the husband's industry is medical, dental, or health services, or educational services.
Occ^w = Mgr. or Cler.	A dummy variable that equals one if the wife's occupation is managerial or clerical, or sales.
Ind^w = Pers. Serv.	A dummy variable that equals one if the wife's industry is "personal services."
Previous Migration[b] (pp. 66-73)	
M-1	A dummy that equals one if the family made an interdivisional (interstate, intercounty, any) move between 1970 and 1971 but did not make such a move between 1968 and 1970.
M-2	A dummy that equals one if the family made an interdivisional (interstate, intercounty, any) move between 1969 and 1970 but did not make such a move between 1968 and 1969 or between 1970 and 1971.

Table 1 (Cont.)

M-3	A dummy that equals one if the family made an interdivisional (interstate, intercounty, any) move between 1968 and 1969 but did not make such a move between 1969 and 1971.
M-1-2	A dummy variable that equals one if the family made interdivisional (interstate, intercounty, any) moves between 1970 and 1971 and between 1969 and 1970 but did not make such a move between 1968 and 1969.
M-1-3	A dummy variable that equals one if the family made interdivisional (interstate, intercounty, any) moves between 1970 and 1971 and between 1968 and 1969 but did not make such a move between 1969 and 1970.
M-2-3	A dummy variable that equals one if the family made interdivisional (interstate, intercounty, any) moves between 1969 and 1970 and between 1968 and 1969 but did not make such a move between 1970 and 1971.
M-1-2-3	A dummy variable that equals one if the family made interdivisional (interstate, intercounty, any) moves in all three pairs of years between 1968 and 1971 (i.e., 1968-69, 1969-70, 1970-71).
Mult. mvs - Ret.	A dummy variable that equals one if the family made multiple moves between 1968 and 1971 (i.e., M-1-2, M-1-3, M-2-3, M-1-2-3 = 1) and the earlier of these moves was a move away from the division (state, county) where they resided in 1971, i.e., the multiple moves consisted of a move away from and a return to the family's 1971 area of residence.
M-t	A dummy variable (used in interactions) that equals one if the family made at least one interdivisional (interstate, intercounty, any) move between 1968 and 1971; that is, equals one if any of the M-1, M-2, ..., M-1-2-3 variables above is one.
Grew up here	A dummy that equals one if the family head grew up in the division (state, county) of his 1971 residence.
# years in current house	(Used only in equations explaining residential moves and plans to move, Eqs. (6) and (7) of Table 3.) The number of years the family has lived in the house or apartment in which it was residing at the time of the 1971 survey.

Table 1 (Cont.)

The following variables are used only in Table 5.

1M	A dummy variable that equals one if the family made exactly one interdivisional move in the last three years (1968-71) (= M-1 + M-2 + M-3).
2M	A dummy variable that equals one if the family made two interdivisional moves in the last three years (= M-1-2 + M-1-3 + M-2-3).
2M-Ret.	A dummy variable that equals one if the family made two interdivisional moves in the last three years and the second was a return to the place lived in before the first move.
3M	A dummy variable that equals one if the family made three interdivisional moves in the last three years (= M-1-2-3).
Dur. < 1 year	A dummy variable that equals one if the family has lived in the division of its current residence less than one year (= M-1 + M-1-2 + M-1-3 + M-1-2-3).
Dur. 1-2 years	A dummy variable that equals one if the family has lived in the division of its current residence for one to two years (= M-2 + M-2-3).

Age, Education

$Age^h = 25\text{-}29$	A dummy variable that equals one if the husband is age 25 to 29.
$Age^h \geq 65$	A dummy variable that equals one if the husband is 65 years old or older.
$Age^w < 20$	A dummy variable that equals one if the wife is less than 20 years old.
$Educ^h = 12$	A dummy variable that equals one if the husband completed high school (but did not go on to higher education).
$Educ^w < 12$	A dummy variable that equals one if the wife has completed less than twelve years of school.

Migration Plans (Explanatory variables used only in Table 4.)

Think move-Job	A dummy variable that equals one if family head replies that he thinks he will move in the near future for job-related reasons (same as dependent variable in Eq. (7) of Table 3).

Table 1 (Cont.)

Think move-Oth	A dummy variable that equals one if family head thinks he will move in the near future for other than job-related or housing-related reasons.

Choice of Destination Regressions

Dependent Variable	For each of the families in the sample who were interdivisional migrants between 1971 and 1972, there are eight observations representing the eight potential destination divisions (j). The dependent variable is a polychotomous variable that equals one for the destination division actually chosen and zero for the other seven.
Explanatory Variables	(See Sec. V for more information about these variables.)
Previous Residence (pp. 83-86)	
Here Before (j)	A dummy variable (used in interactions) that equals one if the family (head) resided in division j in 1968, 1969, or 1970.
Present Values of Earnings Differences (pp. 86-89)	
PV_{ij}^{fam}	Present discounted value of family's earnings difference available by moving from division i to division j (in \$1000s).
Unemployment (pp. 89-91)	
Unemployment Rate (j)	The average unemployment rate in potential destination j.
Distance (pp. 91-92)	The natural logarithm of the distance between the approximate population-weighted geographic center of the division where the family currently resides and the approximate population-weighted geographic center of division j.

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[a] Imputed wages are used if actual wage rates are not reported.

[b]

Type of Migration in Dependent Variable	Type of Previous Migration for Explanatory Variable
Interdivisional	Interdivisional
Noncontiguous state Interstate	Interstate
Noncontiguous county Intercounty	Intercounty
Any moves Plans to move	Any move

IV. EMPIRICAL RESULTS: WHETHER TO MIGRATE ANALYSIS

The estimated equations explaining whether or not a family migrates are presented in Tables 2 through 6. Table 2 presents estimates of the basic formulation of the model explaining interdivisional migration for the total sample and for the two subsamples; this table enables us to determine how sample composition affects the estimates. In Table 3 estimates of this model for the large subsample (which excludes families with military, student, and retired heads) are presented for the seven different dependent variables listed in Table 1.* These regressions show how parameter estimates change as the definition of migration becomes more inclusive and the average distance moved by those considered migrants becomes shorter. Table 4 considers the sensitivity of the results to specification and estimation techniques, using the interdivisional variables and the large subsample. A different income variable (Total Family Income) is tried, and the effects of adding variables indicating plans to move are explored. Then all variables whose coefficients are not significant at the 15 percent level ($t < 1.04$) are removed to conserve degrees of freedom, and this equation is estimated by both OLS and by probit.** In Tables 5 and 6, various ways of looking at the effects of previous moves on subsequent migration are considered.

The explanatory variables in the equations below can be divided into several major categories. For each category, I discuss the relevant findings of previous studies, the hypotheses explored here, the particular variables used to test them (which are defined in Table 1), the empirical results, and their implications for policy. After considering sample composition, I discuss the categories of variables of

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*As noted earlier, the present value of wage difference variables, as constructed here, are only defined at the divisional level. In Table 3 two versions of the regression explaining interdivisional migration are presented, one including and the other excluding the present value variables, to facilitate comparison with the other equations in this table, which also exclude the present value variables.

**An F-test indicates that significant explanatory power is *not* lost when these variables are excluded ($F(11,1563) = 0.37$). In fact, $\overline{R}^2$ increases when they are dropped.

Table 2

INTERDIVISIONAL MIGRATION EQUATIONS FOR THE TOTAL SAMPLE AND THE TWO SUBSAMPLES

	Total Sample (n=1952)		Working Age, Nonstudent, Civilian Sample (n=1605)		Military, Retired, and Student Sample (n=347)[a]	
	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"
EMPLOYMENT STATUS[b]						
Retired	.0631	(1.42)	-[c]	-	(d)	-
Military	.160	(7.43)	-	-	.305	(2.79)
Student	.0474	(0.87)	-	-	.0390	(0.63)
JLK-U	.236	(1.36)	.173	(1.21)		
JLK-E	.0845	(1.20)	.134	(2.26)	.264	(1.09)
JLK-Oth	.313	(1.82)	-	-		
Unempl. Rt. · NOLK-E	-.00056	(-0.18)	-.00012	(-0.05)	-.0319	(-1.79)
Unempl. Rt. · NOLK-Oth	-.00988	(-1.43)	-	-	-.0101	(-0.92)
Unempl. Rt. · JLK-U	-.0178	(-0.71)	-.00658	(-0.32)		
Unempl. Rt. · JLK-E	-.00125	(-0.11)	-.0138	(-1.46)	-.0593	(-1.56)
Unempl. Rt. · JLK-Oth	-.0713	(-2.82)	-	-	-	-
RETURNS TO MIGRATION (PRESENT VALUE OF FAMILY EARNINGS DIFFERENCES)						
pv^{fam} · NOLK-E	.00004	(0.23)	-.00001	(-0.05)	-.00171	(-0.60)
pv^{fam} · NOLK-Oth	.00426	(2.29)	-	-	.00565	(1.84)
pv^{fam} · JLK-U	-.00594	(-3.10)	-.00224	(-0.89)		
pv^{fam} · JLK-E	.00413	(8.11)	.00277	(4.52)	.00403	(3.31)
pv^{fam} · JLK-Oth	-.00709	(-0.87)	-	-		
COMPOSITION OF FAMILY EARNINGS, INCOME, WAGES, AND HOURS						
Nonwg. Inc. . NOLK	.00083	(0.49)	-.00042	(-0.25)	.00702	(1.45)
Nonwg. Inc. . JLK-U	-.151	(-6.01)	-.137	(-6.31)		
Nonwg. Inc. . JLK-E	-.0200	(-2.74)	-.0175	(-2.92)	-.00322	(-0.13)
Nonwg. Inc. . JLK-Oth	.00853	(0.52)	-	-		
Wg^h . NOLK	.00009	(0.10)	-.00007	(-0.07)	.00047	(0.23)
Wg^h . JLK-U	.0585	(3.65)	.0438	(2.81)		
Wg^h . JLK-E	-.0162	(-2.96)	-.0114	(-2.45)	.0379	(1.29)
Wg^h . JLK-Oth	.0271	(1.42)	-	-		
Wg^w	-.00564	(-2.29)	-.00389	(-1.65)	-.00585	(-0.66)
Hrs/yr^w	-.0244	(-2.79)	-.0211	(-2.35)	-.00936	(-0.35)
Wife's Earnings Share	.247	(3.52)	.248	(3.14)	.145	(0.66)
Wife's $Share^2$	-.224	(-3.39)	-.273	(-2.91)	-.139	(-0.69)
LOCATION-SPECIFIC ASSETS						
Own house	-.0181	(-2.60)	-.0178	(-2.87)	-.0257	(-0.85)
Relatives nearby	-.00960	(-1.57)	-.00512	(-0.94)	-.0338	(-1.40)
Occ^h = Prof.	.0116	(1.18)	.0111	(1.33)	-.0358	(-0.61)
Ind^h = Educ. or Med.	-.0198	(-1.57)	-.0189	(-1.75)	-.0246	(-0.35)
Occ^w = Mgr. or Cler.	.0164	(2.07)	.00640	(0.92)	.0921	(2.22)
Ind^w = Pers. Serv.	-.0189	(-1.82)	-.0115	(-1.27)	-.0275	(-0.54)
PREVIOUS MIGRATION						
M-1	.00682	(0.25)	-.0347	(-1.24)	.113	(1.32)
M-2	.182	(7.15)	.231	(9.58)	.0924	(0.99)
M-3	.0992	(3.61)	.109	(4.41)	.186	(1.63)
M-1-2	.222	(4.29)	.238	(4.13)		
M-1-3	.00379	(0.05)	.0811	(1.27)	.251	(1.99)
M-2-3	.0480	(0.76)	.171	(2.81)		
M-1-2-3	.339	(3.62)	.138	(1.49)		
Mult. mvs - Ret.	-.0435	(-0.76)	-.0918	(-1.63)	-.135	(-0.90)
M-t . Grew up here	-.108	(-4.26)	-.114	(-4.74)	-.251	(-2.95)
Grew up here	-.0134	(-1.79)	-.00988	(-1.44)	-.0184	(-0.70)
M-t . NOLK-Oth	.197	(5.49)	-	-	.238	(2.57)
M-t . JLK-U	.206	(2.56)	.183	(2.62)		
M-t . JLK-E	.187	(5.25)	.207	(6.27)	.0833	(0.63)
M-t . JLK-Oth	.376	(4.46)	-	-		
AGE, EDUCATION						
Age^h = 25-29	-.0193	(-2.16)	-.00355	(-0.47)	-.318	(-5.30)
$Age^h \geq 65$	-.0274	(-2.01)	-.0156	(-0.93)	-.0447	(-1.49)
$Age^w < 20$	-.0518	(-2.84)	-.0337	(-2.11)	-.183	(-2.30)
$Educ^h$ = 12	-.0129	(-1.99)	-.0142	(-2.49)	-.0199	(-0.65)
$Educ^w < 12$	.0110	(1.56)	.00482	(0.76)	.0483	(1.71)
INTERCEPT	.0432	(1.98)	.0360	(1.94)	.0919	(1.13)
R^2 ($\bar{R}^2$)	.284	(.264)	.210	(.189)	.405	(.334)

[a] Because of small cell sizes, several variables have been combined for this sample.

[b] For total effects of the various JLK variables, see interactions below (p. 39).

[c] - indicates that there were no observations on this variable in this sample (zero cell size).

[d] Variable excluded so that matrix will not be singular (i.e., military + retired + student always = 1).

Table 3

OLS REGRESSIONS FOR DIFFERENT TYPES OF MIGRATION (INTERDIVISIONAL, TO NONCONTIGUOUS STATES, INTERSTATE, TO NONCONTIGUOUS COUNTIES, INTERCOUNTY, ALL MOVES, AND PLANS TO MOVE) FOR LARGE SUBSAMPLE (n=1605)

	(Eq. (1)) Interdivisional Migration (from Table 2)		(Eq. (1a)) Eq. (1) Without Present Value Variables		(Eq. (2)) Migration to a Noncontiguous State		(Eq. (3)) Interstate Migration	
	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"
EMPLOYMENT STATUS								
JLK-U	.173	(1.21)	.147	(1.05)	-.164	(-1.63)	-.171	(-1.42)
JLK-E	.139	(2.26)	.169	(2.86)	.112	(1.91)	.0994	(1.43)
Unempl. Rt. · NOLK-E	-.00012	(-0.05)	-.00018	(-0.07)	.00024	(0.13)	-.00088	(-0.39)
Unempl. Rt. · JLK-U	-.00658	(-0.32)	-.00231	(-0.11)	.0512	(4.25)	.0492	(3.45)
Unempl. Rt. · JLK-E	-.0138	(-1.46)	-.0156	(-1.65)	-.00817	(-0.84)	-.00883	(-0.76)
RETURNS TO MIGRATION								
PV^{fam} · NOLK-E	-.00001	(-0.05)	-	-	-	-	-	-
PV^{fam} · JLK-U	-.00224	(-0.89)	-	-	-	-	-	-
PV^{fam} · JLK-E	.00277	(4.52)	-	-	-	-	-	-
COMPOSITION OF FAMILY EARNINGS, INCOME, WAGES, AND HOURS								
Nonwg. Inc. · NOLK	-.00042	(-0.25)	-.00051	(-0.30)	-.00113	(-0.65)	-.00081	(-0.39)
Nonwg. Inc. · JLK-U	-.137	(-6.31)	-.130	(-6.49)	-.144	(-7.09)	-.145	(-6.02)
Nonwg. Inc. · JLK-E	-.0175	(-2.92)	-.0166	(-2.76)	-.0142	(-2.32)	-.0136	(-1.87)
Wg^h · NOLK	-.00007	(-0.07)	-.00011	(-0.11)	.00045	(-0.43)	-.00080	(-0.70)
Wg^h · JLK-U	.0438	(2.81)	.0358	(2.78)	.0372	(2.82)	.0387	(2.47)
Wg^h · JLK-E	-.0114	(-2.45)	-.00771	(-1.67)	-.00529	(-1.13)	-.00424	(-0.76)
Wg^w	-.00389	(-1.65)	-.00400	(-1.68)	-.00309	(-1.29)	-.00390	(-1.37)
Hrs/yr^w	-.0211	(-2.35)	-.0200	(-2.22)	-.0172	(-1.89)	-.0178	(-1.64)
Wife's Earnings Share	.248	(3.14)	.250	(3.15)	.237	(2.96)	.228	(2.39)
Wife's $Share^2$	-.273	(-2.91)	-.289	(-3.08)	-.321	(-3.38)	-.302	(-2.68)
LOCATION-SPECIFIC ASSETS								
Own house	-.0178	(-2.87)	-.0186	(-2.99)	-.0215	(-3.42)	-.0292	(-3.92)
Relatives nearby	-.00512	(-0.94)	-.00414	(-0.76)	.00456	(0.82)	-.00018	(-0.03)
Occ^h = Prof.	.0111	(1.33)	.0125	(1.49)	.00924	(1.08)	.0143	(1.41)
Ind^h = Educ. or Med.	-.0189	(-1.75)	-.0213	(-1.98)	-.0148	(-1.35)	-.0134	(-1.03)
Occ^w = Mgr. or Cler.	.00640	(0.92)	.00609	(0.88)	.00141	(0.20)	-.00061	(-0.07)
Ind^w = Pers. Serv.	-.0115	(-1.27)	-.0132	(-1.45)	-.00753	(-0.82)	-.00440	(-0.40)
PREVIOUS MIGRATION								
M-1	-.0347	(-1.24)	-.0443	(-1.58)	-.0466	(-2.27)	-.00991	(-0.41)
M-2	.231	(9.50)	.230	(9.50)	.0626	(2.96)	.168	(6.69)
M-3	.109	(4.41)	.119	(4.15)	.0163	(0.81)	.0566	(2.36)
M-1-2	.238	(4.13)	.241	(4.79)	.160	(3.61)	.165	(3.13)
M-1-3	.0811	(1.27)	.0832	(1.29)	.0317	(0.50)	.0421	(0.56)
M-2-3	.171	(2.81)	.171	(2.79)	.0906	(2.16)	.104	(2.09)
M-1-2-3	.138	(1.49)	.141	(1.52)	.0523	(0.69)	.0530	(0.59)
Mult. mvs - Ret.	-.0918	(-1.63)	-.0950	(-1.68)	-.158	(-3.44)	-.140	(-2.55)
M-t · Grew up here	-.114	(-4.74)	-.117	(-4.84)	-.00719	(-0.33)	-.0384	(-1.50)
Grew up here	-.00988	(-1.44)	-.00911	(-1.32)	-.0104	(-1.61)	-.0111	(-3.13)
M-t · JLK-U	.183	(2.62)	.188	(2.68)	.264	(4.30)	.229	(3.13)
M-t · JLK-E	.207	(6.27)	.222	(6.72)	.191	(6.09)	.157	(4.22)
AGE, EDUCATION								
Age^h = 25-29	-.00355	(-0.47)	-.00348	(-0.46)	-.00219	(-0.29)	-.00286	(-0.31)
$Age^h \geq 65$	-.0154	(-0.93)	-.00832	(-0.50)	-.00763	(-0.45)	-.0123	(-0.63)
$Age^w < 20$	-.0337	(-2.11)	-.0356	(-2.21)	.00141	(0.09)	.0147	(0.77)
$Educ^h$ = 12	-.0142	(-2.49)	-.0149	(-2.61)	-.0142	(-2.46)	-.0122	(-1.78)
$Educ^w < 12$	.00482	(0.76)	.00452	(0.71)	-.00623	(-0.97)	-.00030	(-0.04)
INTERCEPT	.0360	(1.94)	.0365	(1.97)	.0382	(2.53)	.0562	(3.13)
R^2 ($\bar{R}^2$)	.210	(.189)	.199	(.180)	.182	(.162)	.160	(.140)

Table 3--continued

	(Eq. (4)) Migration to a Noncontiguous County		(Eq. (5)) Intercounty Migration		(Eq. (6)) Moves to a New Residence[a]		(Eq. (7)) Family Head Thinks He Will Move for Job-Related Reasons[a]	
	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"
EMPLOYMENT STATUS								
JLK-U	−.169	(−1.45)	−.191	(−1.38)	.0563	(0.24)	.329	(1.82)
JLK-E	.0769	(1.36)	.0756	(1.13)	.0606	(0.54)	.314	(3.56)
Unempl. Rt. · NOLK-E	−.00085	(−0.49)	−.00043	(−0.21)	−.00151	(−0.42)	.00172	(0.61)
Unempl. Rt. · JLK-U	.0392	(3.28)	.0385	(2.71)	.0162	(0.66)	−.0460	(−2.39)
Unempl. Rt. · JLK-E	−.00465	(−0.63)	−.0101	(−1.15)	−.0249	(−1.64)	−.0314	(−2.64)
RETURNS TO MIGRATION								
PV^{fam} · NOLK-E	–	–	–	–	–	–	–	–
PV^{fam} · JLK-U	–	–	–	–	–	–	–	–
PV^{fam} · JLK-E	–	–	–	–	–	–	–	–
COMPOSITION OF FAMILY EARNINGS, INCOME, WAGES, AND HOURS								
Nonwg. Inc. · NOLK	−.00343	(−1.30)	−.00297	(−0.95)	.00928	(1.70)	.00466	(1.09)
Nonwg. Inc. · JLK-U	−.147	(−4.31)	−.143	(−3.53)	−.0947	(−1.40)	.108	(2.04)
Nonwg. Inc. · JLK-E	−.0194	(−2.09)	−.0262	(−2.39)	−.0359	(−1.88)	−.00462	(−0.31)
Wg^h · NOLK	−.000236	(−0.15)	−.00179	(−0.96)	−.00018	(−0.06)	−.00365	(−1.45)
Wg^h · JLK-U	.0420	(2.12)	.0432	(1.84)	−.00339	(−0.08)	.0182	(0.57)
Wg^h · JLK-E	.00609	(0.86)	.0191	(2.28)	.0291	(1.98)	−.00260	(−0.23)
Wg^w	−.00637	(−1.74)	−.00653	(−1.51)	−.0179	(−2.37)	.00068	(0.12)
Hrs/yr^w	−.0243	(−1.75)	−.0191	(−1.16)	−.0504	(−1.75)	.00320	(0.14)
Wife's Earnings Share	.235	(1.93)	.155	(1.07)	.427	(1.70)	−.102	(−0.52)
Wife's $Share^2$	−.255	(−1.77)	−.160	(−0.93)	−.169	(−0.56)	.0649	(0.28)
LOCATION-SPECIFIC ASSETS								
Own house	−.0546	(−5.61)	−.0690	(−5.97)	−.265	(−12.5)	−.0190	(−1.15)
Relatives nearby	.00776	(0.91)	.00082	(0.08)	−.0341	(−1.98)	−.0338	(−2.52)
Occ^h = Prof.	−.00481	(−0.04)	.00383	(0.25)	.0205	(0.76)	.0395	(1.89)
Inc^h = Educ. or Med.	.0100	(0.62)	−.00432	(−0.22)	−.0549	(−1.61)	.00628	(0.24)
Occ^w = Mgr. or Cler.	−.00196	(−0.18)	.00753	(0.59)	.00521	(0.23)	−.00495	(−0.29)
Ind^w = Pers. Serv.	.00337	(0.24)	.00029	(0.02)	−.00796	(−0.28)	−.0254	(−1.13)
PREVIOUS MIGRATION								
M-1	.0584	(2.54)	.0798	(2.93)	.136	(4.36)	.00179	(0.74)
M-2	.0381	(1.85)	.0596	(2.44)	.125	(3.76)	.0702	(2.71)
M-3	.0453	(1.91)	.0760	(2.70)	.0743	(2.35)	.0278	(1.13)
M-1-2	.155	(3.33)	.144	(2.61)	.228	(5.77)	.109	(3.55)
M-1-3	−.0344	(−0.52)	−.0428	(−0.55)	.0951	(1.83)	.0622	(1.53)
M-2-3	−.00740	(−0.20)	−.00733	(−0.16)	.148	(3.45)	.0364	(1.08)
M-1-2-3	−.0941	(−0.80)	−.0961	(−0.69)	.248	(5.17)	.193	(5.14)
Mult. mve - Ret.	−.00432	(−0.08)	−.00788	(−0.12)	# yrs. –	–	–	–
M-t · Grew up here	−.0205	(−0.73)	−.0228	(−0.68)	in current –	–	–	–
Grew up here	−.0185	(−2.05)	−.0145	(−1.35)	house −.00073	(−0.66)	−.00064	(−0.75)
M-t · JLK-U	.207	(2.79)	.182	(2.07)	–	–	–	–
M-t · JLK-E	−.0166	(−0.45)	−.0673	(−1.55)	–	–	–	–
AGE, EDUCATION								
Age^h = 25-29	−.00938	(−0.80)	−.0240	(−1.73)	.00221	(0.89)	−.0178	(−0.92)
$Age^h \geq 65$	−.0202	(−0.79)	−.00920	(−0.30)	−.0572	(−1.08)	−.0117	(−0.28)
$Age^w \leq 20$	.0212	(0.85)	.0459	(1.55)	.211	(4.06)	−.0628	(−1.55)
$Educ^h$ = 12	−.0111	(−1.26)	−.0112	(−1.07)	−.0113	(−0.62)	.0141	(1.00)
$Educ^w$ < 12	−.00898	(−0.92)	−.0152	(−1.31)	−.00575	(−0.28)	−.0252	(−1.60)
INTERCEPT	.0887	(4.48)	.118	(1.45)	.352	(8.56)	.0889	(0.57)
R^2 $(\bar{R}^2)$	.117	(.095)	.109	(.087)	.273	(.258)	.091	(.071)

[a] The sample size for the residential move equation is 1599; families for whom the dependent variables were not reported have been omitted. The previous migration variables refer to previous residential moves. The unemployment rates are county-level.

Table 4

INTERDIVISIONAL MIGRATION EQUATIONS FOR MAIN SUBSAMPLE (n=1605) ALTERNATIVE SPECIFICATIONS AND ESTIMATION TECHNIQUES

	(Eq. (1)) Basic Specification (from Tables 2 & 3)		(Eq. (8)) Using Family Income Measure		(Eq. (9)) Eq. (1) with Migration Plans as Explanatory Variables		(Eq. (10)) Eq. (1) Excluding Variables Whose $\|t\| < 1$ in Eq. (1)		(Eq. (11)) Eq. (10) Estimated by Probit[a]		
	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	Coeff.	"t"	$\partial P/\partial X$	Index[b]	"t"
EMPLOYMENT STATUS											
JLK-U	.173	(1.21)	.165	(1.15)	.142	(1.00)	.132	(2.82)	.0980	[2.45]	(1.35)
JLK-E	.134	(2.26)	.0816	(1.40)	.130	(2.21)	.138	(2.41)	.00916	[0.229]	(0.10)
Unempl. Rt. · NOLK-E	-.00012	(-0.05)	-.00012	(-0.04)	.00010	(0.04)	-	-	-	-	-
Unempl. Rt. · JLK-U	-.00658	(-0.32)	-.00289	(-0.14)	-.00121	(-0.06)	-	-	-	-	-
Unempl. Rt. · JLK-E	-.0138	(-1.46)	-.0116	(-1.21)	-.0139	(-1.48)	-.0142	(-1.50)	.0171	[0.427]	(1.04)
RETURNS TO MIGRATION											
pv^{fam} · NOLK-E	-.00001	(-0.05)	-.00001	(-0.07)	-.00002	(-0.11)	-	-	-	-	-
pv^{fam} · JLK-U	-.00224	(-0.89)	.00814	(3.06)	-.00190	(-0.76)	-	-	-	-	-
pv^{fam} · JLK-E	.00277	(4.52)	.00256	(4.11)	.00274	(4.48)	.00269	(4.41)	.00156	[0.0389]	(1.18)
COMPOSITION OF FAMILY EARNINGS, INCOME, WAGES, AND HOURS											
Nonwg. Inc. · NOLK	-.00042	(-0.25)	-.00025[c]	(-0.43)	-.00061	(-0.36)	-	-	-	-	-
Nonwg. Inc. · JLK-U	-.137	(-6.31)	-.0201[c]	(-3.17)	-.140	(-6.48)	-.130	(-6.57)	-.172	[-4.31]	(-1.41)
Nonwg. Inc. · JLK-E	-.0175	(-2.92)	.00587[c]	(2.62)	-.0180	(-3.02)	-.0170	(-2.85)	-.129	[-3.22]	(-2.10)
Wg^h · NOLK	-.00007	(-0.07)	.00045	(0.29)	.00006	(0.06)	-	-	-	-	-
Wg^h · JLK-U	.0438	(2.81)	.0132	(0.90)	.0418	(2.70)	.0367	(3.00)	.0233	[0.582]	(1.06)
Wg^h · JLK-E	-.0114	(-2.45)	-.0266	(-3.80)	-.0112	(-2.41)	-.0113	(-2.45)	-.00954	[-0.238]	(-1.10)
Wg^w	-.00389	(-1.65)	-.00411	(-1.68)	-.00373	(-1.58)	-.00403	(-1.78)	-.00995	[-0.249]	(-1.35)
Hrs/yr^w	-.0211	(-2.35)	-.0207	(-2.23)	-.0209	(-2.35)	-.0201	(-2.31)	-.0292	[-0.730]	(-1.67)
Wife's Earnings Share	.248	(3.14)	.252	(3.15)	.249	(3.17)	.256	(3.38)	.367	[9.16]	(2.59)
Wife's $Share^2$	-.273	(-2.91)	-.291	(-3.07)	-.273	(-2.93)	-.290	(-3.20)	-.357	[-8.93]	(-1.95)
LOCATION-SPECIFIC ASSETS											
Own house	-.0178	(-2.87)	-.0193	(-3.02)	-.0157	(-2.53)	-.0181	(-3.00)	-.0235	[-0.588]	(-1.83)
Relatives nearby	-.00512	(-0.94)	-.00617	(-1.12)	-.00321	(-0.59)	-	-	-	-	-
Occ^h = Prof.	.0111	(1.33)	.0110	(1.30)	.00936	(1.12)	.0102	(1.27)	.0266	[0.664]	(1.70)
Inc^h = Educ. or Med.	-.0189	(-1.75)	-.0159	(-1.46)	-.0186	(-1.74)	-.0193	(-1.80)	-.0609	[-1.52]	(-1.90)
Occ^w = Mgr. or Cler.	.00640	(0.92)	.00483	(0.69)	.00676	(0.98)	-	-	-	-	-
Ind^w = Pers. Serv.	-.0115	(-1.27)	-.00885	(-0.97)	-.0104	(-1.15)	-.0116	(-1.28)	-.0241	[-0.602]	(-1.10)
PREVIOUS MIGRATION											
M-1	-.0347	(-1.24)	-.0275	(-0.97)	-.0405	(-1.46)	-.0348	(-1.25)	.0447	[1.12]	(1.33)
M-2	.231	(9.58)	.231	(9.49)	.225	(9.39)	.229	(9.57)	.0941	[2.35]	(4.07)
M-3	.109	(4.41)	.116	(4.65)	.107	(4.35)	.109	(4.44)	.0166	[0.414]	(0.52)
M-1-2	.238	(4.13)	.254	(4.38)	.209	(3.62)	.238	(4.16)	.0748	[1.81]	(0.37)
M-1-3	.0811	(1.27)	.0919	(1.42)	.0533	(0.83)	.0807	(1.27)	-.0549	[-1.37]	(-0.03)
M-2-3	.171	(2.81)	.196	(3.19)	.167	(2.76)	.171	(2.86)	-.0748	[-1.87]	(-0.30)
M-1-2-3	.138	(1.49)	.157	(1.68)	.111	(1.20)	.138	(1.50)	-.0837	[-2.09]	(-0.03)
Mult. mvs - Ret.	-.0918	(-1.63)	-.106	(-1.84)	-.0824	(-1.47)	-.0922	(-1.66)	.0197	[0.492]	(0.10)
M-t · Grew up here	-.114	(-4.74)	-.1[illegible]	(-5.15)	-.114	(-4.76)	-.113	(-4.73)	-.0659	[-1.64]	(-1.66)
Grew up here	-.00988	(-1.44)	-[illegible]817	(-1.18)	-.00965	(-1.41)	-.0107	(-1.61)	-.0104	[-0.259]	(-0.64)
M-t · JLK-U	.183	(2.62)	.172	(2.43)	.164	(2.36)	.183	(2.72)	.270	[6.75]	(0.94)
M-t · JLK-E	.207	(6.27)	.227	(6.78)	.208	(6.33)	.208	(6.32)	.0969	[2.42]	(1.97)
AGE, EDUCATION											
Age^h = 25-29	-.0355	(-0.47)	-.00245	(-0.32)	-.00382	(-0.51)	-	-	-	-	-
$Age^h \geq 65$	-.0154	(-0.93)	-.0161	(-0.97)	-.0144	(-0.87)	-	-	-	-	-
$Age^w < 20$	-.0337	(-2.11)	-.0330	(-2.04)	-.0324	(-2.04)	-.0329	(-2.09)	-.472	[-11.8]	(-1.00)
$Educ^h$ = 12	-.0142	(-2.49)	-.0125	(-2.17)	-.0147	(-2.60)	-.0144	(-2.58)	-.0579	[-1.45]	(-1.78)
$Educ^w < 12$	.00482	(0.76)	.00423	(0.66)	.00608	(0.96)	-	-	-	-	-
MIGRATION PLANS											
Think move-Job	-	-	-	-	.0438	(4.31)	-	-	-	-	-
Think move-Oth	-	-	-	-	.0154	(1.21)	-	-	-	-	-
INTERCEPT	.0360	(1.94)	.0370	(1.98)	.0279	(1.50)	.0348	(3.93)	-.0819	[-2.05]	(-3.87)
R^2 ($\bar{R}^2$)	.210	(0.189)	.195	(0.174)	.220	(0.198)	.208	(0.193)	(-2)x log likelihood ratio = 136.3 ~ $\chi^2(30)$		

[a] See the appendix.

[b] Brackets indicate the coefficients of the probit index; see the appendix.

[c] In Eq. (8), replace Nonwg. Inc. with Fam. Inc. for the appropriate variable.

Table 5

PREVIOUS MIGRATION EFFECTS, BY SAMPLE

(Dependent Variable = Interdivisional Migration)

	Specification				
	(1)	(2)	(3)	(4)	
Sample	Only Previous Migration Variables	Eq. (1) + JLK Interactions	Other Explanatory Variables Held Constant (from Table 2)	Only Previous Migration Variables (Number of Moves and Duration of Residence Measures)	
TOTAL SAMPLE (n=1952)					
M-1	.182 (7.35)	.0647 (2.37)	.00682 (0.25)	1M	.237 (8.57)
M-2	.271 (10.38)	.226 (8.68)	.182 (7.15)	2M	.274 (4.88)
M-3	.235 (8.53)	.146 (5.06)	.0992 (3.61)	2M-Ret.	-.0455 (-0.82)
M-1-2	.342 (6.38)	.317 (5.97)	.222 (4.29)	3M	.406 (4.63)
M-1-3	.0811 (1.13)	.0900 (1.29)	.00379 (3.61)	Dur. < 1 yr.	-.0369 (-1.13)
M-2-3	.259 (4.01)	.191 (2.98)	.0480 (0.76)	Dur. 1-2 yrs.	.0175 (0.56)
M-1-2-3	.432 (4.37)	.489 (5.03)	.339 (3.62)	M-t · Grew up here	-.164 (-6.14)
Mult. mvs - Ret.	-.0637 (-1.08)	-.125 (-2.12)	-.0435 (-0.76)	Grew up here	-.0195 (-2.49)
M-t · Grew up here	-.161 (-6.04)	-.149 (-5.62)	-.108 (-4.26)		
Grew up here	-.0195 (-2.50)	-.0195 (-2.56)	-.0134 (-1.79)	R^2 ($\bar{R}^2$)	.119 (.115)
M-t · NOLK-Oth		.172 (4.77)	.197 (7.43)		
M-t · JLK-U	---[a]	.182 (2.59)	.206 (2.56)		
M-t · JLK-E	---	.270 (7.81)	.187 (5.25)		
M-t · JLK-Oth	---	.292 (5.56)	.376 (4.46)		
R^2 ($\bar{R}^2$)	.125 (.121)	.167 (.161)	.284 (.264)		
LARGE SUBSAMPLE (n=1605)					
M-1	.0667 (2.58)	-.0446 (-1.56)	-.0347 (-1.24)	1M	.162 (6.39)
M-2	.247 (9.82)	.226 (9.15)	.231 (9.59)	2M	.266 (4.67)
M-3	.163 (6.43)	.132 (5.22)	.109 (4.41)	2M-Ret.	-.0848 (-1.57)
M-1-2	.294 (4.93)	.261 (4.41)	.238 (4.13)	3M	.126 (1.48)
M-1-3	.110 (1.64)	.110 (1.66)	.0811 (1.27)	Dur. < 1 yr.	-.0770 (-2.48)
M-2-3	.311 (5.14)	.212 (3.44)	.171 (2.81)	Dur. 1-2 yrs.	.0684 (2.35)
M-1-2-3	.165 (1.72)	.160 (1.68)	.138 (1.49)	M-t · Grew up here	-.119 (-4.72)
Mult. mvs - Ret.	-.115 (-2.03)	-.109 (-1.89)	-.0918 (-1.63)	Grew up here	-.0123 (-1.76)
M-t · Grew up here	-.120 (-4.78)	-.123 (-4.97)	-.114 (-4.74)		
Grew up here	-.0123 (-1.76)	-.0123 (-1.80)	-.00988 (-1.44)	R^2 ($\bar{R}^2$)	.0859 (.0813)
M-t · JLK-U	---	.275 (4.17)	.183 (2.62)		
M-t · JLK-E	---	.245 (7.76)	.207 (6.27)		
R^2 ($\bar{R}^2$)	.091 (.086)	.131 (.124)	.210 (.189)		
SMALL SUBSAMPLE (n=347)					
M-1	.320 (5.10)	.249 (3.42)	.113 (1.32)	1M	.410 (4.64)
M-2	.301 (4.06)	.233 (2.93)	.0924 (0.99)	2M	.403 (3.24)
M-3	.446 (5.01)	.271 (2.37)	.186 (1.63)	2M-Ret.	
M-1-2	.196 (1.73)	.196 (1.75)	.251 (1.99)	3M	
M-1-3				Dur. < 1 yr.	-.0666 (-0.68)
M-2-3				Dur. 1-2 yrs.	-.172 (-1.78)
M-1-2-3				M-t · Grew up here	-.196 (-2.40)
Mult. mvs - Ret.	.187 (1.30)	.0372 (0.24)	-.135 (-0.90)	Grew up here	-.0393 (-1.42)
M-t · Grew up here	-.261 (-3.13)	-.208 (-2.35)	-.251 (-2.95)		
Grew up here	-.0393 (-1.42)	-.0393 (-1.43)	-.0184 (-0.70)	R^2 ($\bar{R}^2$)	.188 (.174)
M-t · JLK-Oth	---	.0588 (0.72)	.238 (2.57)		
M-t · JLK-U	---	.352 (2.99)	.083 (0.62)		
M-t · JLK-E	---				
M-t · JLK-Oth	---	.243 (1.73)			
R^2 ($\bar{R}^2$)	.188 (.171)	.212 (.189)	.405 (.334)		

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[a] --- indicates that the variable was excluded from this specification.

Table 6

PREVIOUS MIGRATION EFFECTS FOR INTERSTATE AND INTERCOUNTY MIGRATION FOR THE TOTAL SAMPLE (n=1952)

	Interstate Migration			Intercounty Migration		
	(1) Only Previous Migration Variables	(2) Eq. (1) + JLK Interactions	(3) Other Explanatory Variables Held Constant	(1)	(2)	(3)
M-1	.155 (6.82)	.0893 (3.66)	.0249 (1.02)	.178 (7.34)	.150 (5.80)	.0793 (3.05)
M-2	.197 (7.79)	.164 (6.35)	.111 (4.35)	.125 (5.56)	.101 (4.23)	.0662 (2.79)
M-3	.139 (5.32)	.092 (3.44)	.0521 (1.99)	.161 (5.91)	.138 (4.91)	.109 (3.94)
M-1-2	.392 (7.65)	.354 (6.93)	.266 (5.29)	.187 (3.79)	.165 (3.31)	.0671 (1.36)
M-1-3	.0627 (0.78)	.0726 (0.92)	-.0112 (-0.15)	-.0104 (-0.15)	-.0205 (-0.30)	-.118 (-1.79)
M-2-3	.214 (3.80)	.163 (2.91)	.112 (2.08)	.0187 (0.43)	-.0086 (-0.20)	-.0735 (-1.71)
M-1-2-3	.406 (4.19)	.388 (4.05)	.313 (3.38)	.417 (3.81)	.399 (3.64)	.207 (1.94)
Mult. mvs - Ret.	-.158 (-2.72)	-.191 (-3.30)	-.198 (-3.56)	.0996 (1.63)	.103 (1.68)	.111 (1.88)
M-t Grew up here	-.0810 (-2.91)	-.0840 (-3.05)	-.0452 (-1.69)	-.0625 (-1.86)	-.0592 (-1.76)	-.0420 (-1.28)
Grew up here	-.0169 (-2.08)	-.0169 (-2.09)	-.0135 (-1.67)	-.0146 (-1.40)	-.0146 (-1.40)	-.0176 (-1.68)
M-t · NOLK-Oth	--	.0838 (2.40)	.122 (3.36)	--	.0668 (1.80)	.0930 (2.27)
M-t · JLK-U	--	.301 (4.23)	.132 (1.70)	--	.237 (3.10)	.121 (1.35)
M-t · JLK-E	--	.210 (5.86)	.166 (4.29)	--	.0650 (1.74)	-.0315 (-0.73)
M-t·JKL-Oth	--	.347 (4.89)	.277 (3.11)	--	.0908 (1.30)	-.0624 (-0.56)
R^2 ($\bar{R}^2$)	.097 (.093)	.128 (.122)	.221 (.201)	.075 (.070)	.082 (.075)	.174 (.152)

most policy interest and conclude with those that may not be directly manipulable by policy but have important influences on migration and hence should be held constant to correctly assess the impact of the policy-relevant measures.

SAMPLE COMPOSITION AND LABOR FORCE STATUS

The total sample of 1952 contains 347 families whose heads are students, retired, or in the armed forces. These families may be more mobile than those headed by working-age, nonstudent civilians. Dummy variables indicating whether the family head is a student, retired, or in the military are included in Table 2 to test whether the intercepts are different for these families. We see in column (1) of Table 2 that the coefficients of these dummies are all positive and some are significantly different from zero. Compared with families with working-age, civilian, nonstudent heads, families with military heads are 16.0 percentage points more likely to migrate interdivisionally, other things the same; the comparable figures for retired and student heads are 6.3 and 4.7, respectively.

To test whether the responses of such families to the various explanatory variables are different from those of the working-age, nonstudent, civilian group to which most of the hypotheses in this report more directly pertain, separate regressions have been estimated for a subsample that excludes families with military, retired, or student heads (the large subsample) and one composed only of such families (the small subsample).* Table 2 shows that families in the small subsample do respond differently to the migration determinants considered here than families in the large subsample.**

Because of these differences, the remaining discussion focuses primarily on the sample of 1605 families with nonstudent, working-age, civilian heads, which is deemed to be the more policy-relevant group.

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*In combining students, retired, and military together into one subsample, I do not mean to imply that this is a homogeneous group.

**The major differences are discussed in the pertinent subsections below. The F-statistic testing whether the coefficients for these two subsamples are significantly different has a value of 7.20, which is significant at much better than the 0.01 level.

EMPLOYMENT STATUS

The most frequently discussed policies designed to directly affect migration are programs that would enable or induce unemployed workers to move to labor markets where they are more likely to find jobs. Thus, it is important to determine whether people who are unemployed are more likely to move than those with jobs, as implied by the model in Sec. II. Also of direct interest to policymakers is discovering whether people are more likely to leave depressed areas than localities with more favorable economic conditions. Policies of investment in depressed areas are based in large part on the premise that expanded local economic opportunities will help retain original inhabitants by preventing economically forced outmigration.

Available evidence has provided little guidance to policymakers concerned with the influence of personal and area unemployment on outmigration. Several surveys (e.g., Saben, 1964; Lansing and Mueller, 1967) have shown that certain unemployed workers are indeed more likely to migrate than those who are employed, but these studies do not employ adequate controls for other characteristics that may themselves affect migration, so the direct contribution of unemployment to migration cannot be determined. Studies that have used aggregate data to assess the relationship between unemployment and migration obtain mixed results,* but often unemployment is measured at the end of the

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*Lowry (1966) found outmigration to be insensitive to local labor market conditions. Lansing and Mueller (pp. 91 and 297) report data showing that persons are slightly *less* likely to leave depressed areas than nondepressed areas. Other studies (e.g., Blanco, 1964; Mazek, 1966; Olvey, 1970; and Fields, 1974) have argued that origin "push" is operative but that its role is masked by improper measures of true unemployment conditions. Blanco, Mazek, and Olvey propose synthetic measures like "prospective" or "potential" unemployment, which estimate what unemployment rates would be if there were no out- or net migration, and find these to be positively related to outmigration. Fields (1974) has suggested that the inability of previous studies to find a significant relationship between migration and unemployment rates may be due to the way the latter is measured. The unemployment rate, which pertains to the entire stock of workers and hence includes workers who are already secure in their present jobs, may be an imperfect index of the tightness or looseness of a labor market. Fields shows that measures of turnover in a labor market (accessions and separations) perform better empirically than the beginning-of-period unemployment rate in migration period and hence may have been affected by the intervening migration. Aside from these simultaneity problems, with aggregate data we do not know whether a positive estimated relationship between outmigration and the origin unemployment rate is due to the fact that unemployed persons are more likely to move, or that persons, regardless of their own employment status, are more likely to leave areas that have high unemployment rates; and, to my knowledge, no studies have considered whether unemployed workers are more likely to leave areas with high unemployment rates than areas with lower rates. All three relationships are investigated here.

The model presented in Sec. II suggests that, other things being the same, unemployed workers should be more likely to move than employed ones, especially if they believe that the probability of finding an acceptable job elsewhere is higher than the probability of finding one in the labor market where they currently reside. Thus we expect unemployed workers to be more likely to move than those who are employed and unemployed persons living in a loose labor market to be more likely to move than those living in a tighter market.

The data used here distinguish families whose heads were unemployed at the time of the survey as well as other families whose heads claim to be looking for a (different) job; the latter category includes persons who are employed as well as some who are retired or students.*

In Tables 2 through 4 we test the following hypotheses:

1. *Families whose heads are unemployed or claim to be looking for a (different) job are more likely to move than families whose heads are not looking for work.*
2. *Of those looking for work at the time of the survey,*** *the unemployed are more likely to move than the employed.*

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explaining net migration into 20 SMSAs for the period 1965-70. However, because Field's dependent variable is the net migration "rate," one cannot distinguish the separate influences of these turnover variables on in- and outmigration.

*Similar variables are not reported for wives.

**The data only distinguish those individuals who are unemployed or looking for work at the time of the survey. Others may begin looking for different jobs between the 1971 and 1972 surveys, but this is not

3. *Of persons who are looking for work in year t, those who moved to area i recently (sometime before year t) are more likely to migrate from i between years t and t + 1 than persons without previous migration experience. Recent migrants are probably more likely than nonmigrants to consider migration as a possible avenue of job search. In addition, they may have more information about job opportunities elsewhere (including places where they lived before) or know how to acquire such information more efficiently than persons without recent migration experience.**
4. *Persons who are unemployed or looking for work are more likely to leave an area the higher its unemployment rate. The former group should be more sensitive than the latter to the level of the origin unemployment rate when deciding whether to move.*
5. *Persons who are unemployed or looking for work are likely to respond differently to the various factors that affect migration decisions than persons not looking for work. The specific differences expected are discussed below with the particular variables to which they pertain.*

Hypotheses 1 and 2 are tested through the use of dummies indicating whether or not the individual is unemployed (JLK-U), employed but looking for a different job (JLK-E), or retired or a student and claiming to be looking for work (JLK-Oth) at the time of the survey. Interactions of these JLK dummies and a dummy indicating whether the household head has previous migration experience are used to test hypothesis 3. Interactions of the JLK dummies and the origin unemployment rate provide the test of hypothesis 4. Interactions of these dummies and other explanatory variables are used to test hypothesis 5.

To estimate the difference between the behavior of the JLK-U, JLK-E, and JLK-Oth groups and families whose head is not looking for work, one

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reported. (Amount of unemployment in 1971 is reported in the 1972 survey, but for migrants one cannot determine whether this occurred before or after migration.)

*Also see the subsection dealing with the effect of previous migration experience on subsequent migration decisions.

must consider the JLK interactions as well as the dummies. When all interactions are taken into account, we find for all types of migration that families with heads who are looking for work are more likely to move than those not looking for work, confirming hypothesis 1; the difference is usually statistically significant at 5 percent or better. For the large subsample, when the unemployment rate, present value, income, and wage variables are all set equal to their sample means, we find the values and t-statistics in the following table for the total effects of the JLK-U and JLK-E variables.

TOTAL EFFECTS OF JLK-U AND JLK-E FOR THE LARGE SUBSAMPLE[a]

Dependent Variable	∂P(Mig.)/∂JLK-U				∂P(Mig.)/∂JLK-E			
	M-t=0		M-t=1		M-t=0		M-t=1	
Interdivisional migration	.0989	(3.89)	.282	(4.16)	.0265	(1.38)	.233	(6.71)
Noncontiguous state migration	.117	(4.90)	.381	(6.56)	.0253	(1.56)	.217	(6.99)
Interstate migration	.101	(3.57)	.330	(4.78)	.0138	(0.72)	.171	(4.65)
Noncontiguous county migration	.0640	(1.77)	.254	(3.87)	.0492	(2.15)	.0331	(0.99)
Intercounty migration	.0469	(1.09)	.212	(2.73)	.0611	(2.26)	-.00511	(-0.13)

NOTE: ∂P(Mig.)/∂JLK-U shows how the probability of migration differs for a family with an unemployed head compared with one whose head is not looking for work, when other factors are held constant. Column M-t=0 shows this difference for families who have lived in the area (division, state, county) of their current (1971) residence for more than three years (since 1968 or before). Column M-t=1 shows this difference for families who moved at least once (interdivisionally, interstate, intercounty) between 1968 and 1971. ∂P(Mig.)/∂JLK-E shows how much more (less) likely (in percentage points) a family whose head is employed but looking for work is to migrate compared with one whose head is not looking for work.

[a] From coefficients in Table 3; t-statistics are in parentheses.

We see that of persons in the labor force looking for work the unemployed are usually considerably more likely to move than the employed, confirming hypothesis 2. The JLK-U and JLK-E effects (and especially the elasticities) both tend to become smaller in magnitude as the average distance of the move becomes shorter; i.e., the effect of unemployment (looking for a different job) is greater for noncontiguous state migration than for interstate migration, and greater for interstate migration than for intercounty migration. This implies that persons looking for work are relatively more likely to move long distances than persons not looking for work.[*] A notable, but reasonable, exception is for on-the-job searchers (JLK-E) without recent migration experience (M-t=0). This group appears to be the most likely to search and move to nearby labor markets. Note also that among families without recent migration experience those who are unemployed are more likely to move long distances than other job searchers; for the M-t=0 group the difference between $\partial P(\text{Mig.})/\partial \text{JLK-U}$ and $\partial P(\text{Mig.})/\partial \text{JLK-E}$ becomes smaller as the average distance moved decreases. However, the opposite is true for those who have lived in their area of current residence less than three years. Members of the M-t=1 group who are unemployed are more likely to move short distances *relative* to others looking for work, although, as noted above, both groups are more likely to migrate to distant localities compared with persons not looking for work.

As hypothesized in 3, the JLK effects are always much larger for previous migrants than for families without migration experience. When combined with the previous migration results (M-1, M-2, etc.) discussed below, we can see that families with recent migration experience whose head is unemployed or employed but looking for a different job are substantially more likely to move than those without either of these characteristics. In some cases, the difference between the migration propensities of recent migrants looking for work and of employed heads without recent migration experience exceeds 50 percentage points.

Regardless of which dependent variable is used, families whose heads are not unemployed appear to be insensitive to the level of the origin unemployment rate when deciding whether or not to move. The coefficient of Unempl. Rt. · NOLK is always very small and not significantly different from zero; this is generally true also for the coefficient of Unempl. Rt. · JLK-E, except in the interdivisional equations, where the coefficient is negative with a $|t| > 1$ in the OLS equation but positive ($t = 1.04$), as hypothesized, in the probit equation. However, for families whose head is unemployed, the probability of outmigration is positively and significantly related to the level of the unemployment rate for all types of migration except interdivisional; that is, these families are more likely to leave areas with high unemployment rates than those with lower unemployment rates, other things the same.[*] Like the effect of personal job search, the influence of area unemployment rates on outmigration increases with the average distance moved. In the OLS results in Table 3, a percentage point increase in the unemployment rate is associated with a 3.85 percentage point increase in the intercounty migration rate but a 5.12 point increase in the noncontiguous state rate. The comparable figures for noncontiguous county and interstate migration are 3.92 and 4.92, respectively.

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[*] Indeed, a larger portion of long distance movers are looking for work compared to short distance movers.

These findings go a long way in reconciling the conflicting evidence on the influence of local economic conditions on outmigration. We have seen that families whose heads are unemployed are indeed quite responsive, in the direction expected, to the relative amount of unemployment in their area of residence, but that other families are either unresponsive or responsive in the direction opposite to that expected. This latter fact may explain why other migration analysts have had such a difficult time finding a statistically significant, positive relationship between the outmigration rate and the origin unemployment rate; the unresponsive and perversely responsive subgroups comprise over 98 percent of the total sample and the large subsample used here, whereas families whose heads are unemployed, who respond positively to the unemployment rate in deciding whether or not to move, account for less than 2 percent of these samples.[**] When the various unemployment rate effects are each weighted by the relative size of the group to which they pertain, the weighted average is very small and often negative.[*] Thus, we see that the "push" of origin unemployment rates is effective but only for those who are without jobs; the aggregate effects appear to have been eclipsed by the absence of "push" for the majority who have jobs.

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[*] There are two possible explanations for the fact that we do not also find a positive coefficient on Unempl. Rt. • JLK-U in interdivisional equations: (1) the average divisional unemployment rate may be too aggregated to measure accurately economic conditions in a potential migrant's own labor market; (2) much of the migration response to unemployment rates may be *intra*divisional. However, the fact that we find a positive relation for noncontiguous state migration makes the latter possibility less likely than the former.

Note that unemployed persons living in high unemployment areas are less likely to *plan* to move than those living in low-unemployment areas, but are more likely to actually move.

[**] The sample proportion of unemployed is lower than the national average unemployment rate because our sample includes only white married couples, whose heads typically have considerably lower unemployment rates than other demographic groups.

Policy Implications

These results have important policy implications for they demonstrate that, contrary to the findings of many other studies (e.g., Lowry, 1966; Lansing and Mueller, 1967), local economic conditions do affect outmigration, but only among the subset of people most seriously affected by those conditions--the unemployed. In addition, we have shown that, even without direct policy influence, unemployed persons, as well as others looking for jobs, are more likely to move than those not actively looking for work, bringing into question the need for policies to induce the unemployed to move. Furthermore, we have seen that recent migrants who are searching for work are considerably more likely to move than recent arrivals who have found acceptable employment or than other persons looking for work, indicating that persons who migrate and cannot find acceptable employment tend to move on; we will see below that many of them return to places where they have lived before.

RETURNS TO MIGRATION (PRESENT VALUE OF WAGE DIFFERENCES)

The Conceptual Variable

As noted earlier, human capital theory views migration (like many other types of behavior) as an investment in oneself; whether the investment is undertaken is governed by the expected payoff, or return, on the investment. For most families the main component of the return to migration is likely to be the present value of the difference between potential lifetime earnings after migrating and what would be earned at origin in the absence of migration. The probability that the family will leave origin i should be positively related to the present discounted value of the difference between what the husband and wife could earn elsewhere and what they could earn at i.

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[*] The weighted averages for Table 3 range between +0.00064 and -0.00046 for Eqs. (2)-(5).

Constructing the Empirical Variable

Measuring the return to migration is not a trivial or straightforward matter. The ideal measures of the potential earnings returns to migration would be the differences between the expected present values of family earnings at j, for all $j \neq i$, and the expected present value of the family lifetime earnings at i. However, the data necessary to construct such measures are not available, and a number of assumptions must be made. The procedure used here is as follows: It is assumed that the potential migrant would earn at j the same wage rate as earned by current residents of j with similar characteristics. The characteristics considered here include age, sex, race, marital status, number of years since leaving school, number of years with current employer, education, occupation, industry, disability status, veteran status, and whether a union member.[**] For each census division I have estimated wage equations for both husbands and wives--regressions of the natural logarithm of the hourly wage rate on the characteristics listed above--using a sample of persons living in that division.[***]

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[*] Even if we did observe the entire lifetime stream of earnings, it would only be for places in which the person actually lived. To construct the present value measure discussed here, we need lifetime earnings streams at origin and at all possible destinations. For nonmigrants we would need to know what they could have earned if they had moved and for migrants we would need to know what they would have earned had they not moved.

[**] Years on current job, disability, veteran, and union status are not reported in the IDP data for wives.

[***] IDP data are used to estimate these equations. Census divisions rather than smaller more homogeneous areas were chosen to be the geographic units so that the sample sizes would be sufficiently large to permit estimation of separate equations for each area. All five years of the panel have been pooled to provide large enough sample sizes for each of these wage regressions. Time dummies have been included to allow the intercepts to differ each year. The R^2s for many of the wage equations exceed 50 percent. Some equations include more than one

Estimating wage equations separately for each division allows for divisional differences in parameters. Thus the labor market "value" of various personal characteristics differs geographically.[*] People are hypothesized to locate in the area where their characteristics are valued most highly. For each husband and wife in the sample, a wage is imputed from these equations for each of the nine divisions (including the one where the family lived in 1971). These provide estimates of what a potential migrant could earn in each potential destination j.[**]

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observation for a particular person, but no adjustment has been made for possible intercorrelations among an individual's error terms.

[*] I am implicitly (though unrealistically) assuming each division to be a (group of similar) labor market(s).

[**] Despite some shortcomings, measures of the potential returns to migration estimated by this approach should be better than those in other studies. In the studies based on the human capital approach which used the 1960 Census to model 1955-60 migration (DaVanzo, 1972; O'Neill, 1970; Schwartz, 1968; and Bowles, 1970), the return variables (1) are based on income rather than wage data; (2) use *post*migration (1959) incomes (which may have been affected by migration during the period being considered); (3) use aggregate data in which husbands and wives cannot be matched (in fact, only one of these studies (DaVanzo) even considers the possible effect of one spouse's wages on the other's migration); and (4) assume migrants earned the same at origin and destination as others there of the same age, race, sex, and education. In the present study, we were able to observe each person's actual premigration wages at origin and are able to base our estimates of their potential wages at all possible destinations on a more detailed list of personal characteristics.

Kaluzny (1975) uses a weighted average of the average *income* in each area to construct his measure of expected gains; previous migration rates are the weights.

Polachek and Horvath (1976) estimate a regression explaining earnings changes between year t and year t + n (n = 1 or 4) and include a dummy indicating whether the family migrated between years t and t + 1 and interactions of this dummy with four personal characteristics for husbands (age, premigration earnings, years on current job, and a professional occupation dummy) as explanatory variables in this earnings change equation. This equation is then used to impute what similar nonmigrants could have earned had they migrated. However, such an approach is likely to suffer from a selectivity bias (see Lewis, 1974, for a discussion of this problem in migration studies) for there may be uncontrolled differences between the earnings differences available to the two groups that made migration attractive to one and not to the other. Especially when area of origin is not controlled for, it is not correct to assume that nonmigrants would have reaped the same gain had they moved as "similar" persons who did move.

These imputed wages are then adjusted in three ways: (1) Migrants are assumed to lose some of the premium they receive for specific job experience (years on current (premigration) job) and union membership.[*] (2) The imputed wage at j is multiplied by $W_i/\hat{W}_i$, the ratio of the actual to the imputed wage at i, to adjust for the fact that, due to certain unobserved characteristics (e.g., ability), persons who earn higher (lower) than expected wages at i are likely to earn higher (lower) than expected wages at j.[**] (3) All divisional wages are deflated by their respective divisional cost-of-living indices.[***]

Then, for each potential destination j, the present value of the difference between what the person could earn at j and what he (she) does earn at i has been calculated using a 2.5 percent annual rate of growth of real wages,* an 8 percent discount rate, weighting each wage by the number of hours the person worked the previous year (1970),** and summing over the number of years until he (she) is 65 years old. The husband's and wife's present values are then added. These measures can be interpreted as the lifetime returns that a knowledgeable prospective migrant family might anticipate to be available by moving to destination j.

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[*] $\hat{W}_j$ is estimated twice, once setting the union dummy and the years on the current job variables equal to their 1971 values, and once setting them equal to zero. When constructing present values, the disadvantage of losing the wage premium due to specific work experience and union membership is assumed to decrease over time. The imputed opportunity wage is taken to be a weighted average of the experience/union adjusted imputed wage and the one not so adjusted. The weight given to the adjusted wage decreases over time and is assumed to equal zero after five years. (This is done only for $j \neq i$.)

Many men who belonged to a union before they moved did not after they moved.

These adjustments cannot be made for women because union and years-on-the-current-job variables are not reported for them.

[**] However, this overlooks the fact that some persons may stay at (leave) i precisely because their relative position in the wage distribution is higher (lower) there than elsewhere. However, $\hat{W}_j$ not adjusted by $W_i/\hat{W}_i$ did not perform as well as the adjusted ones.

[***] Present values that used wages adjusted for cost of living performed better in explaining migration than measures not adjusted for geographic differences in the cost of living.

Adjustments for the expected probability of employment, defined as one minus the area unemployment rate, have also been tried but did not improve the performance of the present value variable. Aside from the problems associated with using the area unemployment rate to construct a measure of the probability of finding an acceptable job (see footnote on p. 36 and footnote 3 on p. 90), Fields found that his migration equations had considerably more explanatory power when measures of employment probability were entered linearly than when they were multiplied by annual earnings, suggesting that these probabilities may exert an effect independent of that on expected earnings.

For the whether to migrate analysis, these eight family present values (one for each potential destination) are collapsed into a single measure that indicates the size of the lifetime wage gains available to the family if it migrates; in doing so, account is taken of the fact that some of these wage gains are more costly to attain than others. To approximate present values net of costs for each potential destination, each family present value has been divided by the natural logarithm of the distance between i and j, the proxy for many of the costs of moving from i to j (see p. 91);*** the resulting variable can be viewed as a benefit/cost ratio. The *maximum* of these benefit/cost ratios, PV^{fam}, is the measure of the potential returns to migration.****

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*The implication of using the same rate of growth for each area is that the wage paths associated with various possible destinations will not cross. This means that we are modeling migration as if it were a once and for all decision, for the best choice in period 0 is implicitly assumed to be the best choice in all subsequent periods. Present values that use rates of growth which differed among areas (defined as one-quarter of the coefficient of the 1972 dummy in the wage equations (see footnote 2 on p. 36) or derived from estimated experience paths) have also been tried but did not perform as well as the present values based on the same rate of growth for each area.

**Ideally, we would like to multiply each future year's potential wage gain by the number of hours to be worked that year at that location, but since we do not have information on the latter, the number of hours worked in 1970 is used to measure the average number of hours the husband and wife are expected to work each year in the future. This is assumed to be the same for all j. (Even if we could observe differences among areas, hours should be assumed to be the same in each area to avoid an index number problem.)

***It would have been more appropriate to *subtract* costs, but distance cannot be readily converted into dollar terms. Present values not deflated by distance have also been tried but did not perform as well as the deflated measures.

****To sum up the preceding discussion, the formula for the PV^{fam} variable is

Hypotheses Tested Here

We expect the coefficient of this measure of expected returns to migration, PV^{fam}, to be positive. Furthermore, we hypothesize that families whose heads are looking for jobs, especially those with unemployed heads, should be more responsive to the opportunities available elsewhere than families whose heads are not looking for work; interactions of the present value variable and the JLK dummies provide the test of this hypothesis.

$$\underset{\neq i}{ax} \left\{ \left(\sum_{t=1}^{T^h} \frac{H^h \cdot (\tilde{W}_{jt}^h - W_i^h)(1 + g)^t}{(1 + r)^t} + \sum_{t=1}^{T^w} \frac{H^w \cdot (\tilde{W}_j^w - W_i^w)(1 + g)^t}{(1 + r)^t} \right) \div \ln(D_{ij}) \right\} \div 1000$$

where H^h = number of hours worked by the husband in 1970

H^w = number of hours worked by the wife in 1970

$\tilde{W}_{jt}^h = \hat{W}_{jt}^{*h} \cdot W_i^h / \hat{W}_i^h$

$\hat{W}_{jt}^{*h}$ = estimated wage the husband could earn in area j, given his personal characteristics (imputed from the wage equation for division j), adjusted for union membership, experience on current job (see footnote 1 p. 45), and cost of living

W_i^h = average hourly wage husband earned last year in division i, adjusted for cost of living

$\hat{W}_i^h$ = estimated wage at i, adjusted for cost of living (imputed from wage equation for division i)

$\tilde{W}_j^w = \hat{W}_j^w \cdot W_i^w / \hat{W}_i^w$

$\hat{W}_j^w$ $(\hat{W}_i^w)$ = wife's imputed wage at j(i)

W_i^w = wife's actual wage at i

(All wages are adjusted for cost of living.)

g = real rate of growth = 0.025

r = discount rate = 0.08

T^h = working life remaining = 65 - Age^h if $Age^h < 65$
= 1 if $Age^h \geq 65$

T^w = same as T^h substituting wife's age

$\ln(D_{ij})$ = proxy for costs = natural logarithm of the distance between i and j

Empirical Results

Returning to Tables 2 and 4, we see that the migration response to a change in the family's potential earnings gain does vary by the head's labor force status, as well as by which sample is used (Table 2) and by how the explanatory variable measuring income effects is defined (Table 4).

Families with employed heads not looking for work appear to be insensitive to the expected returns in deciding whether to move. The coefficient of $PV^{fam} \cdot$ NOLK-E is always insignificant. However, curiously, families in the total sample with heads *not* in the labor force and *not* claiming to be looking for work (NOLK-Oth) appear to respond positively, and significantly, to the level of PV^{fam} in deciding whether to move.*

When the nonwage, nonlocation-specific income variable, Nonwg. Inc., is used, families with unemployed heads appear to respond negatively to the PV^{fam} variable; the coefficient is significantly different from zero for the total sample, but is insignificant for the more policy-relevant large subsample. However, when total family income is used to measure income effects (Eq. (8) of Table 4), the large subsample coefficient of $PV^{fam} \cdot$ JLK-U becomes positive and significant with a t-statistic exceeding 3, and is now larger than the PV^{fam} coefficients for the JLK-E or NOLK group. Our inability to find a consistently positive relationship for families with unemployed heads may be due to the assumption made in constructing the PV^{fam} variable that the family head will each year work the same number of hours in i and each potential destination j as he worked in i in 1970. (Most men unemployed at the time of the survey did work nearly full time in 1970). Unemployed persons may be responding to expected hours changes as well as to wage differences.

The size of the coefficient of $PV^{fam} \cdot$ JLK-E, on the other hand, appears to be relatively insensitive to how the income variable is defined, always being positive and significant, with a t-statistic exceeding 4 for the large subsample. The coefficient is even larger and is much more significant ($t > 8$) when the total sample is used.

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*Perhaps the NOLK-Oth group contains some students or military men who did not report they were looking for work at the time of the survey but completed school or left the armed forces, searched for jobs, and moved before the next survey.

To sum up, it appears that families with heads who are employed but looking for a different job are quite responsive to the size of expected returns to migration in deciding whether or not to move, while families with employed heads not looking for work are unresponsive to opportunities elsewhere. The results for families with unemployed heads are mixed, being sensitive to sample composition and to the definition of another explanatory variable and probably biased by measurement error in the construction of the PV^{fam} variable. But for families with civilian working-age, nonstudent heads, they indicate either no significant relationship between migration and $PV^{fam} \cdot$ JLK-U or a significantly positive one.

These results are encouraging in the support they give to the methodology used to estimate what potential migrants could earn in alternative destinations.* In Sec. V, we see that the imputed wages also explain how a family chooses among alternative destinations.

Policy Implications

The findings discussed in this section imply that, other things the same, any policy that reduces (increases) the dispersion of the distribution of after-tax, cost-of-living-adjusted wages available in alternative geographic labor markets should reduce (increase) migration of persons who are unemployed or dissatisfied with their current jobs. This would include policies that might affect wage rates per se, e.g., minimum wage laws, as well as policies that affect the real value of the portion of the wage kept by the employee, for example, an income maintenance program's implicit tax on wages; such a tax would reduce the size of the net wage gain return to migration available to program participants.**

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[*] In a regression not reported here, the husband's and wife's components of the present value variable were entered separately. The coefficient of the wife's component was positive, but insignificant.

[**] Changes in net wage rates also affect the opportunity costs of migration, as discussed later in this section.

FAMILY INCOME

How Family Income Might Affect Migration*

Even when the return to migration is held constant, the level of a family's income may affect its propensity to migrate (O'Neill, 1970; DaVanzo, 1972). The direction of the relationship between the level of family income and the probability the family will migrate is ambiguous a priori. On the one hand, the greater the family's income, the better able it is to afford the costs of moving (DaVanzo, 1972). But in addition to this financing effect, income may have a consumption effect on migration (O'Neill, 1970; DaVanzo, 1972). If migration or the nonpecuniary returns to it are the types of goods that people buy more of as their income increases (normal goods), the consumption effect will be positive and reinforce the positive financing effect. However, if the migration process or the nonpecuniary returns to it are inferior goods, the consumption effect will offset the financing effect and the sign of the income effect will be indeterminate, a priori.

The sign and size of the income effect have important policy implications for they indicate the potential effect on migration of public programs that change a family's income.

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*The few previous studies that have attempted to estimate income effects have generally found them to be positive. Using aggregate data, O'Neill (1970) found the coefficient of origin income to be positive in explaining interdivisional migration when the difference between origin and destination income was held constant. DaVanzo (1972), using a similar model, found that the size of the partial derivative of the migration rate with respect to origin income is positively related to the distance moved and is negative for relatively short moves. This evidence is consistent with a positive financing effect and a negative consumption effect. (The positive coefficient of the income-distance interaction can be interpreted as indicating that the financing effect is more important the costlier (longer distance) the move. The distant-independent influence of income on migration was negative, indicating the influence of either opportunity costs independent of distance or a negative consumption effect.)

Kaluzny (1975) uses total family income to measure income effects in his analysis of migration with micro (IDP) data. He estimates income effects that are positive at younger ages but become very small or negative for middle-aged persons.

Defining the Income Variable

To estimate the income effect one should use an income measure likely to induce the same behavioral response as an exogenous change in income such as would be brought about by an income supplement or a relocation bonus. A variable measuring the family's nonwage, nonlocation-specific income, Nonwg. Inc., is included to measure such a concept. It excludes total family income components such as wage income and returns on location-specific assets (e.g., farm, business, and professional income) which are likely to have their own independent effects on migration. For purposes of comparison, results are presented in Eq. (8) of Table 4 using an income variable, Total Family Income, that does not exclude these components.

Empirical Results

The coefficient of Nonwg. Inc. is always significantly negative and fairly large in absolute magnitude in explaining the migration of families with unemployed heads;[*] it is much smaller in absolute magnitude, but still negative and significant, for families with heads who are employed but looking for a different job. The Nonwg. Inc. coefficient is typically insignificant for families whose heads are not looking for work.[**]

The negative income coefficient for the JLK-U and JLK-E groups appears to indicate that the migration process, or the returns to it, are on balance an inferior good. For the unemployed group, it appears that those whose unemployment has caused them the greatest financial hardship and necessitated depleting their savings and selling their assets (or those who did not have assets to begin with) are the most likely to move.[*] And since many of the unemployed were laid off, these results are consistent with the conjecture that those with the largest nonwage incomes can best afford to wait for their old jobs to become available again.

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[*] This relationship is *not* due to a positive correlation between nonwage income and age; even though nonwage income and age are positively correlated, *at each age* the average nonwage income of nonmovers exceeds that of movers; the former is usually two to ten times larger than the latter.

Note, however, that the income effect is positive and significant in explaining which unemployed *plan* to move.

[**] It is interesting to note that the income effect is significantly positive for nonlooking employed persons in the equation explaining changes of residence.

In Table 4, Eq. (8), I try the Total Family Income variable, which includes wage income and returns on location-specific capital (farm, business, and professional income and the imputed return to equity in the family's house), to determine the sensitivity of estimated income effects to the definition of the income variable.[**] We can see in Table 4 that income effects estimated using this income variable are smaller in absolute magnitude, less significant statistically, and sometimes have a different sign than the corresponding coefficients of Nonwg. Inc. The most dramatic difference is for the JLK-E group whose income effect is negative and significant when the nonwage, nonlocation-specific variable is used, but is positive and significant with the total family income measure.[*]

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[*] Lansing and Mueller (1967) also found that the incentive to move becomes stronger when unemployment becomes a hardship; families with unemployed heads who experienced large income losses because of the unemployment or who were forced to take emergency measures to make ends meet, e.g., drawing on savings, were more likely to plan to move than families less seriously affected by the unemployment.

Money received as unemployment compensation is included in both of the income variables. Although state unemployment compensation is transferable when one moves (the state that collected the insurance premiums will pay the benefits even if the recipient no longer resides in that state), some people are apparently not aware of this fact (Lansing and Mueller, p. 172). If individuals think they will lose their benefits when they move, those receiving unemployment compensation, especially those living in high-benefit states, may be reluctant to move. This is another possible explanation for the negative income coefficients estimated for the unemployed.

[**] If wage income and returns on location-specific assets were also included per se as explanatory variables, the income effect should be the same regardless of which income variable is used (it is the coefficients of the wage and location-specific assets variables, which are included in one income measure but not in the other, that should change).

Many of the *components* of wage and location-specific income (Wg^h, Wg^w, Hrs/yr^w, Own house) are controlled for here, but the actual amounts of income are not entered as explanatory variables. (Variables measuring farm, business, and professional income have been tried as explanatory variables, but their coefficients were never significant.)

Policy Implications

It appears that the income effect is not robust across alternative methods of estimating it.[**] This is disturbing because of the important policy implications of this variable. More work is needed before we can determine whether migration is a normal or inferior good and can confidently predict from nonexperimental data the effect on migration of an income supplement or relocation bonus. Nevertheless, the results presented here are consistent in indicating income effects to be generally insignificant for persons not looking for work but significantly negative for the unemployed, implying that staying, rather than moving, is the normal good for this latter group. Thus, unless receipt of an income bonus is conditional upon its being used to help defray the costs of moving, income supplements given to the unemployed may be used to subsidize their staying in their current location rather than to finance job search in other labor markets.

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[*] This sign change is puzzling because it was expected that the inclusion in the income variable of wage and location-specific income, each of which should have a negative effect on migration, would bias the Total Family Income coefficient in a *negative* direction.

[**] It is interesting to note that the problems in estimating income effects on migration are similar to those encountered in estimating income effects on labor supply (see Greenberg, 1972; DaVanzo, De Tray, and Greenberg, 1973; and Smith, 1975). In both cases one wants to estimate separately the effects of the wage and nonwage components of income, for only the latter can give estimates of pure income effects. When estimating income effects on labor supply, care must be taken to exclude types of nonwage income that are work-related (e.g., transfer payments such as unemployment compensation or welfare, whose receipt is conditional on not engaging in work). Analogously, in estimating income effects on migration one wants to exclude from the income measure components that are returns on location-specific capital. Furthermore, the level of assets, or the flow from those assets, is likely to be endogenous to most family decisionmaking. Because assets are generated from past labor supply and, to some extent, past migration, life-cycle patterns of assets, labor supply, and migration are likely to be simultaneously determined by similar economic factors, including position in the life cycle.

HUSBAND'S WAGE RATE

As discussed in Sec. II, the higher the origin wage rate, the greater the opportunity cost of leaving a job at origin to migrate and look for a new job. Thus we expect husbands with jobs at origin to be less likely to migrate the higher their wage rate, other things the same. For a given wage rate, the strength of this effect will be positively related to the amount of time the migrant must spend moving and searching for an acceptable job and negatively related to the proportion of that time he would have spent working had he not moved. Hence, for a given amount of search time, the negative effect of a particular wage rate should be weaker for a person who was unemployed before moving than for one who was working full time.

In the empirical analyses in this report, potential opportunity costs are measured by the husband's and wife's wage rates.[*] The wage coefficients, which are allowed to differ for the NOLK, JLK-U, and JLK-E groups for males, are expected to be negative when family income and the husband's and wife's potential returns to migration, all of which contain wages as a component, are held constant.

When Fam. Inc. is the income variable (Eq. (8) of Table 4), the coefficients of the wage variables show the effect on migration of a *compensated* change in wage rates; to calculate uncompensated wage effects, one must add the corresponding income effect, weighted by the number of hours worked by the spouse under consideration, as well as the wage effects that work through the present value and the wife's earnings share variables. In Tables 2 and 3 and most of Table 4, Nonwg. Inc. is the income variable. In this case the wage coefficient measures the wage effect not compensated for the income effect (though it is still compensated for the wife's share and present value effects); to calculate a fully compensated wage effect, one must subtract the income effect weighted by the number of hours worked by the appropriate spouse.

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[*] Imputed wage rates are used for persons whose wages are not reported in the survey.

Wage rate · Hours-of-work interactions have also been tried to allow the opportunity cost effect to vary with the number of hours worked, but the coefficients of these interactions were insignificant when the wage rate alone was also entered. Because the hours variable refers to the number of hours worked the year preceding the survey, it is not necessarily a good measure of the conceptually appropriate variable--the number of hours being worked before moving--especially for persons unemployed at the time of the survey.

Empirical Results

In Tables 2 and 4, the husband's wage coefficients are insignificant in explaining interdivisional migration for families whose heads are not looking for work or who are not in the labor force. The compensated husband's wage effect is negative, as hypothesized, and significant if the husband is employed but looking for a different job, but is positive and significant if he is unemployed. We expected that the opportunity cost effect might be weaker for families with unemployed heads, but did not expect it to be positive.*

The estimated wage coefficients for the JLK-U and JLK-E groups are larger in algebraic value when Nonwg. Inc. is used than when Fam. Inc. measures the income effect; and since one subtracts a negative income effect, the compensated wage effects calculated from the equation using Nonwg. Inc. are even larger in algebraic value compared with those from the equation that includes Fam. Inc. In fact, the JLK-E wage effect from the interdivisional equation using Nonwg. Inc. is positive if the hours worked by the husband exceed 650.

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*I suspect that this result stems from the measurement error we noted previously regarding the construction of the $PV^{fam} \cdot$ JLK-U variable. In constructing the present value variable, it was implicitly assumed that in each period the potential migrant would work the same number of hours at destination after he moved as he would at origin if he did not move, both being set equal to the number of hours he worked the year before the survey. But unemployed persons are likely to be responding to expected increases in hours as well as to wage changes when deciding whether to migrate. For a given expected hours increase, the higher the destination wage W_j, the greater the earnings gain associated with that hours increase. If W_i and W_j are positively correlated, as seems very likely, this could explain the positive coefficient of $Wg^h \cdot$ JLK-U; unlike employed husbands looking for a job, who are less likely to migrate the higher their wage, presumably because the opportunity costs of moving (foregone origin wages) are higher, unemployed husbands are *more* likely to migrate the higher the wage they could earn if they worked, presumably because their opportunity costs of *not* moving (foregone *destination* wages) are higher.

These same relationships hold for the probit equation; the compensated wage effect is always positive for the JLK-U group and larger than that for the JLK-E group; it is negative for the JLK-E group when the number of hours worked is low but becomes positive as hours of work increase.

Looking at Table 3 we see that compensated and uncompensated wage effects for both the JLK-U and JLK-E groups become larger in algebraic value as the average distance of the type of migration under consideration becomes smaller (the latter is *positive* and significant for intercounty moves).* This is consistent with the expectation that the opportunity cost of moving should be inversely related to the average distance moved.

Policy Implications

Most policies that would affect net wages, e.g., new taxes, wage subsidies or minimum wage laws, are likely to bring about an *uncompensated* change in wage rates. Thus, to estimate their effect on migration, we must also consider wage effects on migration that work through the present value and wife's share variables (and through the income variable when Fam. Inc. is used), as well as the estimated coefficient of the wage rate variable. Such an exercise does not yield a simple, unambiguous answer. Not only does the size of the direct wage effect vary by employment status and type of migration, but the magnitudes of the various indirect effects depend on a number of other factors as well: the size of the husband's and wife's wage rates and hours of work,** the number of additional years he will work, and whether the wage change under consideration is local or national.[*] It does appear that a policy that increases (decreases) wages only in the local labor market will tend to reduce (increase) the probability that a person who is employed but searching for work will migrate interdivisionally, whereas policies that change wages everywhere will have an effect similar in direction but much smaller in magnitude. Programs that increase wages elsewhere more than in the current location are likely to increase the probability that persons engaged in on-the-job search will move. Families whose heads are not looking for work will be relatively unaffected by changes in wages.[**]

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*Recall that the present value variable is not included in the equations explaining shorter distance moves so we are unable to hold its effect constant. Note that a comparison of Eqs. (1) and (1a) in Table 3 shows that the interdivisional $Wg^h \cdot$ JLK-E coefficient becomes larger when the present value variable is not included.

**The husband's wage effect on migration that works through the wife's earnings share variable is negative when the wife's earnings are smaller than the husband's share (< 0.45 in the divisional equation) and is positive when the wife's share is larger. It is zero when either the husband or wife does not work.

WIFE'S WAGE RATE

As noted in the previous subsection, the wife's wage rate is included to test for the hypothesized negative influence on opportunity costs of wages foregone while moving and looking for work.[***] The wife's wage coefficient is always negative and significant at 10 percent or better (except for the plan to move equation and the divisional equation estimated for the small subsample); even the probit coefficient is significant at 10 percent. However, when the wife's wage effect estimated in an equation using Nonwg. Inc. is compensated for the income effect, the compensated wage effect is positive if either the size of the appropriate income effect or the number of hours the wife works is not very small in absolute magnitude. Note, however, that the direct estimate of the compensated wife's wage effect in Eq. (8) of Table 4 is negative and significant at 5 percent. Thus there does appear to be a negative opportunity cost effect for wives.

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[*] If the net wage a particular person could earn is assumed to change everywhere, for example, because of a change in national economic conditions or a new tax rate applicable in all areas (through, say, a federal income maintenance program), the change in the size of the present value variable will be much smaller than if the same wage change only occurred in the labor market of current residence; in either case, the present value effect must be weighted by the discounted sum of hours to be worked in each year until retirement divided by the logarithm of distance.

[**] It seems inappropriate to draw policy implications for families with unemployed heads because of the aforementioned problems due to the apparent measurement error in the $PV^{fam} \cdot$ JLK-U variable. (The calculated uncompensated wage effects are positive for this group.)

For migrations shorter than interdivisional, we are unable to consider the differential effects of local and national wage changes because the present value variable has not been defined for these types of geographic mobility. The total wage effect, $\partial P(Mig)/\partial W_{g_i}^{h}$, is always positive in these regressions, being largest for the JLK-U group and smallest for the NOLK-E group.

[***] Again a Wage rate · Hours-of-work interaction was tried but was insignificant.

As with the husband's wage, to calculate the effect on migration of an uncompensated change in the wife's wage one must also consider the effects that work through the present value and earnings share variables. Again, the size of these effects depends on the numbers of hours the husband and wife work, their wage rates, and her age, as well as whether the wage change is local or national. The wife's wage effect that works through the earnings share variable is positive if the wife's earnings are smaller than the husband's and will usually outweigh the direct wage effect in absolute magnitude. Thus, an increase in the wife's wage that did not change (much) the present value variable appears to increase migration if the wife earns less than the husband, but to reduce the migration propensities of families in which the wife earns the majority of the couple's wage income. A wage increase that is local only will reduce the present value of the earnings returns to migration. For the JLK-E group, the only one in the large subsample whose PV^{fam} coefficient is positive, an increase in local wages will always reduce the migration of families in which the wife earns the majority of family earnings. In families in which the wife earns less than the husband, the negative present value effect of a local wage increase will usually outweigh the positive wage effects if the wife is now and plans to continue working full-time. For wives who work half-time or less, the overall effect on migration of a local wage increase will be negative only if the wife is quite young (and hence has a large number of years over which the reduced earnings differential would be received). For both husbands and wives, a labor market change that causes an increase in the wage available elsewhere but does not change the wage available in the labor market of their current residence will unambiguously increase migration, ceteris paribus, whenever the coefficient of PV^{fam} is positive.*

WIFE'S HOURS OF WORK AND SHARE OF EARNINGS

Over the years, and especially recently, it has become increasingly common for women, both married and unmarried, to work. The labor force participation rate of married women has increased from 22 percent in 1948 to 43 percent in 1974 (Bureau of Labor Statistics, 1975). Such changes are likely to have important effects on family decisionmaking in general and on family migration in particular. Of particular interest to policymakers should be the potential influences on migration of policies such as the Equal Rights Amendment that might further increase women's attachment to the labor force.

Several recent studies have shown that families in which the wife works are less likely to migrate than families with nonworking wives (Long, 1974; Sandell, 1975; Mincer, 1976). Long and Mincer show in simple tabular analyses that families with husbands 30 years of age or older whose wives were employed in 1965 were less likely to be 1965-70 interstate migrants than those with nonworking wives, although at ages 25-29 men with wives working in 1965 were slightly more likely to move between states in the subsequent five years than men whose wives were not working in 1965 (13.9 percent versus 13.1 percent). Sandell, in a regression analysis of the "Parnes" data on middle-aged women, finds that families in which the wife worked in 1967 were significantly less likely to move to a different county or SMSA by 1972 than families in which the wife did not work in 1967. An alternative indicator of the wife's labor force commitment, the number of years she had her job, also had a negative influence on family migration.

Sandell hypothesizes that the lower migration propensity of families with working wives is due to their husbands' being less likely to search distant labor markets and to the opportunity costs of the wives' foregone wages; furthermore, he seems to assume that migration will always have a negative effect on wives' earnings.[*] Mincer formulates a model about the migration propensity of a group of families, for whom both the husbands' and wives' mean net gains are assumed to be negative. He shows that *when the husband's mean gain is held constant*, increasing the wife's share of the family gain will reduce the proportion of families who move if the husbands' and wives' gains are not perfectly correlated across families.[**] However, both the Sandell and Mincer arguments assume that the wife will always make a negative contribution to family returns to migration, on average. But if the wage the wife could earn in the destination where her family's net return is maximized, W_{j*}, exceeds the wage she earns now, W_i, an increase in the number of lifetime hours she plans to work will increase her returns to migration. If $W_{j*}^w > W_i^w$ and if her returns rise faster with an increase in her hours than her costs (i.e., costs rise less than proportionately with hours), as seems likely, an increase in the wife's attachment to the labor force will increase the probability that the family will move.[***]

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*Similarly, a nonuniform wage change that increases wages elsewhere much more than wages in the current location may increase the probability of migration.

None of the referenced studies is able to disentangle the total effects of wife's work into its components--its effect on opportunity costs, family income, and the expected present value of *family* earnings gains--since none of these studies controls for these variables. In addition, the influence on family migration of the wife's working may vary not only with the degree of her attachment to the labor force (most of the referenced studies considered only whether she worked), but also with the contribution that work makes to family earnings. In the empirical work here, the number of hours the wife worked in 1970 is used to measure the former,[*] and the share of family wage income earned by the wife (wife's earnings share) is included to allow for the latter. The square of the wife's share term is also included to allow its effect to be nonlinear; it is expected that for given family income and expected family returns to migration, both of which are controlled for here, married couples in which the wife earns all of the income may behave much like couples where the husband earns all of the income.

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[*] Sandell finds that wives who migrated between 1967 and 1971 experienced a smaller absolute earnings increase in that period than otherwise similar nonmigrant wives. However, the difference appears to be due to the fact that migrants experience a smaller increase (larger decrease) than the nonmigrants in number of weeks they worked in 1971 compared to 1966, rather than migration causing a decrease in the wage rate the wife earns. The labor supply reduction by migrant wives may represent a voluntary response to their husband's migration-induced increase in earnings rather than an adverse effect of migration.

[**] This is because the increase in the wife's share increases the absolute size of the negative family net gain by more than it increases the standard deviation of the distribution of this family gain.

[***] Of course, if the partial derivative of costs with respect to hours exceeds one or if $W_{j*} < W_i$, an increase in the wife's lifetime work hours would further decrease her negative net returns and would reduce the probability that the family will move.

We noted in Sec. II that unless the wage opportunities for husbands and wives are perfectly correlated in all potential destinations (and this is certainly not the case for the imputed wage opportunities estimated for this study), it will be more difficult for the family to maximize the opportunities of both spouses than for one spouse only. In families where both spouses contribute to family earnings, the family will maximize the *sum* of the husband's and wife's potential wage gains rather than the individual components. This should already be taken into account in our definition of the family present value variable. However, the construction of that and other variables may not adequately allow for other possible differences between families in which only one spouse works and families in which both spouses work. On the one hand, the costs of job search and possible losses of job-specific capital are likely to be higher when both spouses work, but on the other hand, there may be the potential for risk pooling; the chance that (at least) one spouse will find a job will be higher when both are searching for work than when only one plans to work.[**]

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[*] Measures of longer term attachment, such as a number of years in the labor force, are not available in the 1971 IDP data.

[**] For instance, if the family wishes to minimize the amount of time one of its members is without work after moving, or, alternatively, maximize the probability of receiving some income by a certain date (say, when its unemployment compensation or savings runs out), it may be able to do this more effectively by having two (or more) members, rather than one, looking for work. The income earned by one (say, the wife), can then be used to subsidize the job search of the other.

Holding all other variables constant (including those that contain Hrs/yr^w as a component), we see that regardless of the type of migration being considered, the specification of the equation, or the estimation technique, the coefficient of Hrs/yr^w is nearly always negative and significant at 5 percent or better, the main exceptions being the insignificant coefficients for the subsample of families with military, retired, or student heads and for the plans to move equation.* A dummy variable indicating whether Hrs/yr^w is greater than zero was also tried to test for the threshold effect found in the Long, Sandell, and Mincer studies, but it was insignificant when the continuous Hrs/yr^w variable was also included. Thus it is the *extent* of the wife's work, not just whether she works, that is important.

As with the wage rate variables, the coefficient of Hrs/yr^w variable indicates the size of the totally *compensated* hours effect when Fam. Inc. is the income measure.** The uncompensated effect is discussed below.

Holding constant the wife's wage and hours, the husband's wage, the expected family earnings increase, and family income, we find that the families in which the wife contributes to family earnings are more likely to move than otherwise similar families without working wives, giving some support to the risk-pooling hypothesis. The wife's share and share squared coefficients are positive and negative, respectively, and are statistically significant for all types of migration (except very short moves), all specifications, and for both the OLS and probit equations. In the large subsample the effect on migration of the wife contributing to family income is always positive except for families in which her share is very large (> 75 percent for interstate migration, > 90 percent for interdivisional, > 95 percent for intercounty). The function peaks around 40-45 percent.

The many avenues through which the extent of the wife's work effort can affect migration and the discussion of a number of ceteris

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*Note the moving plans variable is based only on the *head's* response to a survey question, whereas the other dependent variables refer to actual *family* migration.

**As before, an adjustment for the income effect, this time weighted by the wife's wage, must be made when Nonwg. Inc. is used.

paribus effects (which call for compensating changes in other variables) make it difficult to see the overall influence on migration of the wife's working. To calculate the uncompensated effect, $\partial P(Mig)/\partial(Hrs/yr^w)$, one must consider the hours effects that work through the other variables that contain Hrs/yr^w as a component--PV^{fam}, Fam. Inc., and the wife's earnings share variables. When reasonable assumptions are made about the values of the wife's age and wage rates at origin and other locations and about the husband's hours and wage, the uncompensated wife's hours effect may be positive in certain cases,[*] such as when her share of earnings is not substantial (less than 25 percent) or when her opportunities available elsewhere are better than those at origin ($W_j^w > W_i^w$) and she is fairly young and hence has a number of years over which to receive this wage increase.[**] The size of $\partial P(Mig)/\partial(Hrs/yr^w)$ becomes smaller algebraically the larger the value of Hrs/yr^w, other things the same. Ignoring the present value component (i.e., assuming $W_j^w \leq W_i^w$), $\partial P(Mig)/\partial(Hrs/yr^w)$ will always be negative for families in which the wife earns close to half or more of the family wage income.

Thus we see that the effect on family migration of the wife' working is not as simple as indicated in recent studies, which generally estimate it to be negative. The size of the effect varies with the wife's age, wage, hours of work, and her contribution to family earnings, and may in certain cases be positive.

There are implications in these findings for the effects on migration of policies that may increase married women's attachment to the labor force (e.g., the Equal Rights Amendment). They should have mixed effects, increasing the migration propensities of some families

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[*] In fact, the Hrs/yr^w coefficient is positive, though insignificant when the wife's share variables are excluded; when a quadratic hours term was also tried, the hours effect was positive as long as $Hrs/yr^w < 1875$. The coefficient of Wg^w is also insignificant when the share variables are excluded. The share coefficients are smaller in absolute magnitude when the Hrs/yr^w and Wg^w variables are not included in the equation but still have the same signs and are significant. The share function peaks earlier (around 30 percent when Wg^w and Hrs/yr^w are excluded. Thus the same general implications arise regardless of the specification used.

[**] Note this is consistent with Long's finding that young families (the husband is 25-29) are more likely to migrate if the wife works.

(especially those with young wives currently located in labor markets that offer relatively low pay to women [$W_j > W_i$]), while decreasing those of others (particularly those whose wives make a substantial contribution to family income in the current location and do not have good opportunities elsewhere).

LOCATION-SPECIFIC CAPITAL

The term "location-specific capital" refers to assets that are more valuable in their current location than they would be in other areas; such assets are costly to dispose of, replace, or transfer to another locality. Major items include personal ties and relationships, information about the labor and products markets, a family's home, and location-specific capital the husband and wife have accumulated on their jobs, such as a clientele, seniority, and specific on-the-job training. The potential transactions costs of replacing such assets or losses in their value represent a cost of moving. Thus it is hypothesized that the greater the amount of location-specific capital the family possesses in its area of current residence, the less likely it is to leave that area, other things the same.

Previous studies (e.g., Lansing and Mueller, 1967) have shown that certain types of location-specific assets do indeed discourage migration; families who own their homes or have friends or relatives nearby exhibit lower rates of geographic mobility. Nonsalaried workers in professions that require heavy investments in capital equipment or the building of clienteles, or persons in professions with nonreciprocal licensing requirements that restrict interstate mobility, have also been shown to have low migration rates (Ladinsky, 1967).

In the empirical analysis here, the family's amount of location-specific capital is measured by:

- whether the family owns its home,
- whether the family has relatives nearby, and
- the occupation and industry of the husband and wife.*

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*Other measures of location-specific capital have also been tried in the empirical analysis but are not included in the regressions

Turning to the empirical results, we see that home ownership and proximity of relatives inhibit migration, as hypothesized. Although the coefficient of Own house becomes larger and more significant as the average distance of the type of migration under consideration becomes smaller (home ownership is the most significant variable in explaining intercounty and residential mobility), the elasticity remains about the same regardless of the type of migration. Of course, it is possible that home ownership may be simultaneously determined with decisions regarding geographic mobility--families that plan to move may choose not to buy homes (or families without homes may move to buy homes).

The Relatives nearby coefficient fluctuates in sign and significance for the various types of migration considered here. It is significantly negative in the equations explaining residential migration and plans to move.

Originally, dummy variables for each of the standard census one-digit* occupation and two-digit industry groups, for both the husband and wife, were included in the equations. Groups whose coefficients were not significantly different from zero have been dropped; groups whose coefficients were not significantly different from one another have been combined. The remaining groups are husband's occupation = professional, husband's industry = medical/dental or educational, wife's occupation = managerial or clerical, and wife's industry = personal services. The problem with such a categorization is that the

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presented here because their coefficients were not statistically significant (although they generally had the expected signs). These include:

- whether the head receives business, professional, or farm income, and if so, how much,
- whether the family head is self-employed,
- number of years the family head has been at his current job,
- whether the household head belongs to a labor union,
- whether the family has school-age children, and if so, how many,
- number of years the family has lived in its present house or apartment (this variable is included in Eqs. (6) and (7) of Table 3,
- number of neighbors known, and
- other indicators of social ties to the area, e.g., attendance at PTA meetings, church, or social organizations.

*Two- or three-digit occupations are not reported in the 1968-72 IDP data.

one-digit occupation that contains people most likely to build up location-specific capital in their job--professionals--also contains people likely to have the largest geographic labor market and the most efficient job search mechanisms (e.g., professional meetings), and vice versa. Thus, the coefficient of the occupation dummies can only tell us the net result of these two opposing influences.*

We find that families with male heads who are professionals or with female heads who have managerial (or clerical) occupations are more likely to make long-distance moves than those with other occupations. The size-of-market effect appears to be stronger than that of location-specific capital, on average.

Families in which the husband is in the educational or medical-dental fields or the wife's industry is personal services are less likely to move long distances than otherwise similar families in other industries. These are all fields in which one may build up location-specific capital through a clientele (and perhaps a license).

PREVIOUS MIGRATION EXPERIENCE

Why Previous Migration Might Affect Subsequent Migration

Other research (e.g., Morrison, 1971; Van Arsdol et al., 1967; Lansing and Mueller, 1967) has shown that previous (especially recent) migration is a strong correlate of subsequent migration. The positive effects of past migration on current migration may be partly due to the fact that (1) recent arrivals have had less time than long-time residents to build up location-specific capital in an area or that (2) they have lasting personal characteristics, e.g., age, education, or occupation, that cause them to be more mobile in general. Nevertheless, the effects of previous mobility are expected to persist, but to be smaller, even when these other factors are controlled for. It is hypothesized that certain *unobserved* factors (for example, wanderlust or a greater responsiveness to opportunities elsewhere) cause some people to be more mobile than others, and also that there is some learning by doing associated with moving--families who have moved before find it easier and less costly to move again than those who have never moved. Furthermore, dissatisfaction with one move may cause a family to move again, perhaps returning to the original location.

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*A separately entered dummy indicating that the family head was self-employed was insignificant. Perhaps careful use of self-employment, occupation, and industry interactions would help disentangle the size of market and location-specific capital effects, but the resulting cell sizes are likely to be small.

The above discussion suggests not only that previous migrants are more likely to move again than those without recent migration experience, but also that there should be systematic patterns according to the number and recency of those moves.

Morrison (1971) and others have shown that the longer the family has lived in its current locality, the less likely it is to move again. It is plausible to suppose that duration of stay in an area is correlated with the amount of location-specific capital a family has built up. The longer a family remains in an area, the more costly it is to leave, in terms of potential losses of location-specific capital, including friendships and information about that area.

Holding constant the recency of the last move, the probability that a family will move again is likely to be related to the number of moves it has made in the past, reflecting a "learning by doing" effect. However, if multiple movers have lived in the area of current residence before they first moved (i.e., the multiple moves included a move away from and a move back to the place now lived in), these former return migrants should be less likely to move again than families with the same number of moves who had not lived in the current area before their most recent move there. For a given date of (most recent) arrival in an area, previous multiple movers who also lived in that area before are likely to have more location-specific capital in that area than nonreturn multiple movers to that area. Also, the fact they returned may indicate that they did not feel their initial migration lived up to expectations; this may lead them to conclude that migration is not a worthwhile investment for them.

Whether migrants move again is likely to be in large part determined by the extent to which the first move lived up to expectations. Persons who moved to steady work at high wages are more likely to be satisfied with their original move than migrants who are still looking for work. The latter group may become discouraged and move on.

This discussion suggests a number of hypotheses that can be tested with IDP data to illuminate the phenomenon of repeat movement. In the empirical analysis, we test the following seven hypotheses about the effects of previous migration on the probability of subsequent migration:

1. *Families who moved before are more likely to move again than those who have never moved.*
2. *The more recent the last move, the greater the probability that the family will move in the current period. Alternatively stated, the longer the family has lived in the area of its current residence, the less likely it is to move.*
3. *Families now living in area i whose head grew up in i are less likely to leave i than those whose head grew up elsewhere.*
4. *Holding constant the recency of the last move, the probability that the family will move again should be positively related to the number of moves made in the past.*
5. *Multiple movers now living in i who lived in i before the previous moves are less likely to move again than multiple movers who were nonreturn migrants to i.*
6. *Of families with previous migration experience, those whose head is looking for a (different) job should be more likely to move in the current period than those whose head is not looking for work. They should also be more likely to migrate than others looking for work but without recent migration experience.*
7. *The above hypothesized effects of past migration on current migration should be smaller, but are expected to persist, when other variables measuring other migration determinants, such as location-specific capital, age, education, occupation, and so on, are held constant.*

The Subsequent Mobility of Previous Movers (Test of Hypothesis 1)

Data in the table below show that previous migrants are indeed more likely to move again. The total sample of 1952 families contains 142 families who made at least one interdivisional move between 1968 and 1971. Of these families with recent migration experience, 25 (17.6 percent) moved between 1971 and 1972; less than 1 percent of the families without recent interdivisional migration experience changed the division of their residence between 1971 and 1972. Over half of the 1971-72 interdivisional migrants in our sample also moved interdivisionally between 1968 and 1971. Comparable figures for interstate, intercounty, and residential moves are also given in the table. We can see that similar results hold for interstate and intercounty migration. The subsequent migration rates of previous migrants all exceed 15 percent; the subsequent mobility rate for all previous movers is nearly 35 percent. Over 50 percent of 1971-72 migrants also migrated at least once between 1968 and 1971, and over 80 percent of all 1971-72 movers also moved between 1968 and 1972; that is, less than 1 of every 5 families who moved between 1971 and 1972 did not also move during the previous three years. For all types of geographic mobility, the migration rate of those with recent (same-type) migration experience relative to that of recent nonmigrants (col. 6) increases as the average distance moved increases. A family that migrated interdivisionally between 1968 and 1971 is nearly 18 times more likely to migrate interdivisionally between 1971 and 1972 than one without recent interdivisional migration experience; 1968-71 intercounty migrants are only six times more likely to change county between 1971 and 1972 than families who have lived in their current county for at least three years.

SUBSEQUENT MOBILITY OF PREVIOUS MOVERS

Type of Migration	(1) No. (%) in Total Sample[a] Who Moved At Least Once Between 1968-72	(2) No. (%) in Total Sample Who Moved Between 1971-72	(3) No. (%) of 1968-71 Movers Who Also Moved Between 1971-72 (%=col. 3÷col. 2)	(4) 1971-72 Mobility Rate of 1968-71 Movers (col. 3÷col. 1)	(5) 1971-72 Mobility Rate of Those Without Recent (1968-71) Moving Experience (col. 2-col. 3)÷(N-col. 1)	(6) 1971-72 Mobility Rate of Recent Movers Relative to Recent Nonmovers (col. 4÷col. 5)
Interdivisional	142 (7.27%)	43 (2.20%)	25 (58.1%)	17.6%	0.99%	17.8
Interstate	189 (9.68%)	54 (2.77%)	30 (55.6%)	15.9%	1.36%	11.7
Intercounty	320 (16.39%)	96 (4.92%)	52 (54.2%)	16.3%	2.70%	6.04
All moves (including intracounty)	803 (41.14%)	344 (17.62%)	277 (80.5%)	34.5%	5.83%	5.92

[a] Total sample is 1952 (N).

How Hypotheses 2-7 Are Tested

In the regressions in Tables 2 through 6 (pp. 29 through 34), a series of dummy variables is used to test hypotheses 1 through 7.* In the interdivisional regressions, I have used dummies indicating whether or not an interdivisional move was made in the three previous pairs of years of the Panel data, 1968-69, 1969-70, and 1970-71. All possible combinations of these dummies are used to explore the effects on current migration of the timing and number of previous moves. This allows the cumulative inertia effect (hypothesis 2) to vary with the number of recent moves (hypothesis 4) and vice versa. (In Table 5, variables indicating the number of moves and the duration of residence are entered separately to estimate these effects independently.) A dummy indicating that the family head grew up in the area provides the test of hypothesis 3.

A dummy variable (Mult. mvs - Ret.) indicating that multiple moves concluded with a return move back to the area of 1971 residence tests hypothesis 5. The interaction of a dummy indicating that a recent move was made with one that indicates that the family head grew up in the area of current (1971) residence is also included to test for this prior-return-migration effect over a longer retrospective period. Interactions of a dummy indicating that a previous move was made and dummies indicating whether or not the family head is looking for work are used to test hypothesis 6. Hypothesis 7 is tested by observing in Tables 5 and 6 how the coefficients of the measures of past migration change when other explanatory variables are added to the migration equation. Table 5 presents interdivisional results for the total sample and the two subsamples; Table 6 reports interstate and intercounty regressions for the total sample.

In the noncontiguous state and interstate migration regressions in Tables 3 and 6 the previous migration dummies refer to previous

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*These previous migration explanatory variables may, with the dependent variable, be jointly dependent on the explanatory variables and hence correlated with the equation's error. However, no attempt has been made to correct for this (see Nerlove and Press, 1973). I am implicitly assuming these previous migration explanatory variables to be predetermined as of the start of the migration period under consideration.

interstate moves; the grew up here dummy indicates whether the family head grew up in the *state* of his 1971 residence. In the noncontiguous county and intercounty migration equations in Tables 3 and 6 the explanatory variables measure 1968-71 *intercounty* moves; the grew up here dummy is also measured at the *county* level. Dummies indicating recent *residential* moves are the explanatory variables in the equations for residential moves and plans to move in Table 3; the number of years the family has lived in its house is included to measure duration of residence.

Empirical Results of Tests of Hypotheses 1-7

Turning to the estimates in Tables 2 through 6, we see that for all three samples, all types of geographic mobility, and all specifications, families that have moved before are usually more likely to move again, confirming hypothesis 1.* As hypothesized, the size (and significance) of this effect differs according to when the previous moves were made, the number of previous moves, and whether or not the family head is looking for work, as well as by the type of migration. We see in Table 3 that in general the previous migration effects become weaker as the average distance of the type of move under consideration becomes smaller.

The hypothesis of cumulative inertia (hypothesis 2) is often *not* supported for the short (three-year) retrospective period considered here. Families who have lived in their area of current residence less than 1 year are in general less likely to move than those who have lived there longer. Except in the intercounty equations, families who moved 1 to 2 years before (M-2 or Dur. 1-2 yrs) are usually the most likely to move or to plan to move again, perhaps indicating that recently arrived migrants are willing to allow some time for adjustment before deciding whether to move again.** Families who grew up in the

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*The previous migration coefficients are often insignificant in the interdivisional equation estimated by probit. This may be because cell sizes for some of the explanatory variables are quite small for this type of migration when the large subsample is used.

**Morrison (1971) found a similar result in his investigation of intercounty migration using the Social Security Continuous Work History area of current residence are usually significantly less likely to migrate than those who grew up elsewhere, confirming hypothesis 3, although the size of the coefficient is always relatively small.

In general, the probability of subsequent migration does tend to increase with the number of previous moves, supporting hypothesis 4, although in the large subsample those who moved every year are less likely to move again than those who moved once or twice, implying that there may be a limit to a family's tolerance for frequent repeated mobility. Of families with recent multiple moves, those who returned to a place where they lived before are less likely to move again than those who were nonreturn migrants to their current residence, as hypothesized. The coefficient of Mult. mvs - Ret. is significantly negative in explaining interdivisional, noncontiguous state, and interstate migration for the large subsample.

Among previous migrants, those returning to the area where they grew up are less likely to move again than others with recent migration experience, as hypothesized in 5.[*] The coefficient of M-t · Grew up here is usually statistically significant, especially in explaining interdivisional and total sample migration.

Previous migrants who were not employed or were looking for a (different) job at the time of the survey (i.e., NOLK-Oth, JLK-U, JLK-E, or JLK-Oth) are substantially more likely to move again than those who were employed. The size of the effect varies somewhat among the

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Data: persons who lived in a county less than one year were less likely to move than persons who lived there 1 to 2 years.

[*] For recent multiple movers whose multiple moves resulted in a return to the area where they grew up, one must add the Mult. mvs - Ret. and M-t · Grew up here coefficients to the appropriate M-1, M-2, ... coefficients to determine how they differ from families without recent migration experience. Note that persons who move twice and return to the area where they grew up (Mult. mvs - Ret. = M-t · Grew up here = 1) are in many cases less likely to move than those who moved only once or than those who have not moved recently. Because a large fraction of double moves are return moves, this may explain why Morrison (1971) finds that when duration of residence is held constant, those who moved twice in the recent past (eight years in his case) are less likely to move again than those who moved zero, one, or three or more times. When the Mult. mvs - Ret. and M-t · Grew up here variables were excluded from the specification used here, the M-1-3 and M-2-3 coefficients were negative.

component groups and depends on which sample, specification, and migration measure is used, but is nearly always significantly different from zero.*

As hypothesized in 7, we see in Tables 5 and 6 that the coefficients of the previous migration variables usually become somewhat smaller in magnitude, but are still sizable and significant, when the explanatory variables that control for the other personal and place characteristics that affect migration are added. In several cases (e.g., interdivisional equations for the large subsample), the change in the coefficients is remarkably small.

Summary of Main Findings Regarding Chronic Movers

To sum up, our findings provide a basis for disentangling the causes of repeat migration by showing which persons at risk to chronic movement (recent migrants) do in fact become chronic movers. We have seen that recent migrants who are unemployed or employed but looking for a different job are considerably more likely to move again than recent arrivals who have apparently found acceptable employment. It has been shown that families who made several recent moves are more likely to move again *if* those multiple moves were a series of *nonreturn* moves, but that persons who made multiple moves that concluded with a return to a place lived in previously may be no more likely to move (again) than persons who have not moved at all. We will show below that many apparent chronic movers--previous migrants who moved again--do in fact return to places where they lived before, bringing into question the prediction of continued high migration propensities for this subset of "chronic" movers.

AGE AND EDUCATION

The likelihood that the family will move is expected to be negatively related to the age of the male family head. The relationship is not expected to be as strong as that usually found in other studies because many of the other explanatory variables--e.g., amount of location-specific capital, family income, the present values of wage differences--may be correlated with age and already adjust for many of the reasons often given for expecting a negative relationship between age and migration. Nevertheless, certain costs of moving, e.g., psychic costs or costs related to the number of belongings, may increase with age. The relationship between the family's migration and the age of the wife is also expected to be negative, but weak, for the same reasons.

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*For families whose head is looking for work, or not in the labor force, the effect of previous migration is not distinguished by frequency or timing. To calculate the total effect of previous migration for such families, one must add the coefficient of the appropriate M-t · JLK variable to that of the appropriate M-1, M-2, ..., variable.

Originally, age dummies for all five-year age groups for both husbands and wives were included in the regression specification to test these hypotheses while allowing the age-migration relation to be nonlinear. As with occupation and industry, groups with insignificant coefficients have been dropped and those whose coefficients were not significantly different from one another have been combined. Based on these criteria, only three age dummies appear in the regressions--$Age^h = 25\text{-}29$, $Age^h \geq 65$, $Age^w < 20$. All three have negative coefficients and are significantly different from zero in the total example, but only the coefficient of $Age^w < 20$ is significant in the large subsample. Note, furthermore, that the $Age^w < 20$ coefficient becomes larger in algebraic value as the average distance moved decreases; its coefficient is positive and significant in explaining intercounty and residential moves. Thus married couples with very young wives are less likely than other couples to move long distances, but are more likely to make short moves.

Migration studies typically find that age-specific migration rates for five-year age groups decrease as age increases for ages > 20-24. We do observe that families with husbands 65 or over and those with wives less than 20 are less prone to long distance migration, but contrary to expectations, in our total sample males 25-29 are significantly less likely to move than those less than 25 or those 30-64. However, this appears to be due to the fact that men of this age who are students or in the military are less mobile. The coefficient of $Age^h = 25\text{-}29$ is negative, very large in absolute magnitude, and significant in the small subsample that contains only students, military, and retired families, but is insignificant in the civilian nonstudent sample. The observed patterns also may be due to the fact that other explanatory variables--e.g., the present value variables, income, and the measures of location-specific capital--are correlated with age and capture specific effects that in past studies had been lumped together in "age."*

Along with a negative age relation, a positive relation between education and the propensity to migrate is one of the most consistent findings in other migration research. A number of hypotheses have been proposed to explain this relationship: Educated persons have been hypothesized to be more efficient at processing information, to be better able to deal with economic disequilibria, to be more adaptable to change, to have larger geographic job markets, and to prefer geographic to occupational mobility because of investments in occupation-specific training (Schwartz, 1976; Mahoney, 1968; Schultz, 1975). Thus it is expected that the probability that a family will migrate will be positively related to the education of the husband and to the education of the wife. As with age, occupation, and industry, initially dummies for all levels of husband's and wife's education were included to test this hypothesis and to allow the education-migration relationship to be nonlinear. As before, groups whose coefficients were not significantly different from zero have been dropped and those whose coefficients were not significantly different from one another have been combined. The only variables which remain using these criteria indicate whether the husband has exactly twelve years of education and whether the wife has less than twelve years of schooling.

Like the age results, the education coefficients are also different than expected. Families with male heads who have completed high school

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*When these explanatory variables are left out and the age dummies are the only variables included in an equation explaining interdivisional migration for the large subsamples, the $Age^h = 25\text{-}29$ coefficient is positive (0.009, $t = 1.3$) and the $Age^w < 20$ coefficient is still negative but is less than half its large subsample value (-0.013, $t = -0.7$). The simple correlation between husband's age and interdivisional migration is only -0.096.

($Educ^h = 12$) are less likely to move than those whose male heads have less than 12 years of education (and also less likely to move than those with more education, as expected). For wives, education appears to have a negative rather than a positive effect on migration when the husband's education is held constant; families with wives with less than 12 years of schooling are more likely to move than those with wives who have finished high school,[*] although the coefficient is not significant for the large subsample.[**] For husbands, these same general effects prevail even when the other explanatory variables are omitted from the equation (in fact, the negative $Educ^h = 12$ coefficient becomes larger in absolute magnitude and more significant). However, for wives, the $Educ^w < 12$ coefficient becomes negative, though very insignificant, when the other explanatory variables are left out. The simple correlations between husband's and wife's years of education and family interdivisional migration are very small--+0.047 and +0.028, respectively.[***]

Aside from the fact that important migration determinants that are correlated with age and education are already held constant, another possible explanation for why the age and education patterns observed here differ (even when other explanatory variables are not held constant) from those usually found is that the samples for this study contain only persons married in both 1971 and 1972, whereas the data documenting the typical age and education patterns are usually not, if ever, marital-status specific. It is possible that the typically observed age and education patterns may in large part be due to the migration of persons who are not yet married, entering marriage, or leaving marriage, since other studies have shown that persons changing marital status account for a major fraction of moves made at all ages.

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[*] When dummies for all education groups were included, this negative relationship between the wife's education and migration prevailed throughout the range when husband's education was also held constant. (Husband's and wife's educations are positively correlated.)

[**] Perhaps educated nonworking women are more likely to build up location-specific capital in a locality, e.g., volunteer work, than their less educated counterparts.

[***] Polachek and Horvath (1976) in their analysis of IDP data also find little relation between migration and husband's age and education and find a significant negative relationship with the wife's education.

PLANS TO MOVE

Dummy variables indicating whether the head thinks he will move in the next couple of years have been included in Table 4 to determine whether people who think they will move are in fact more likely to migrate when other migration determinants are held constant.[*] We see in Table 4 that families whose heads think they will move for job-related reasons are indeed significantly more likely to migrate interdivisionally. Those who plan to move for other reasons are also more likely to move, though the coefficient is not nearly as large or as significant as for job-related plans. Note in Table 4 that adding the plans to move explanatory variables has little effect on the sizes and t-statistics of the other explanatory variables. Most of the coefficients become slightly smaller in absolute magnitude, but some actually increase in value.[**]

In Eq. (7) of Table 3, the job-related plans dummy is the dependent variable so that we can see whether the same variables that affect actual migration decisions also affect plans to move. Most of the key results have already been noted earlier in this section. We see that persons who are looking for a (different) job are indeed more likely to think they will move, although the size of this effect is *inversely* related to the unemployment rate in their county of origin; persons who are unemployed are less likely to plan to move the higher the unemployment rate in their county of residence but are, we have seen, more likely to become actual intercounty or interstate migrants. Plans to move seem relatively unrelated to families' incomes, wages, hours, and composition of earnings, although families with unemployed heads are significantly *more* likely to think they will move the higher their income. However, we see in Eqs. (1) through (6) that exactly the opposite relationship holds for actual migration behavior--the higher the family nonwage income, the less likely the unemployed are to move. The influence of previous migration experience on subsequent plans to move is similar to that on actual mobility, although families who moved every year in the past three years are much more likely to plan to migrate again than to actually do it.*

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[*] Persons who answered that they thought that they might move in the near future were asked why; the answers have been coded into three main categories: "purposive productive reasons" (to take another job, to get nearer work), "purposive consumptive reasons" (housing or marriage), and "other" (response to outside events, e.g., armed services, health reasons, etc.). Dummies measuring all three have been tried but only the first and third were significant in explaining long-distance migration; presumably most people in the "consumptive" category make short (intracounty) moves.

A variable indicating whether the family head was willing to move to another community if he could get a good job has also been tried but was insignificant when the variables indicating moving plans were included.

[**] When the plans variables were added to the equations explaining shorter distance moves (results not reported here), the coefficient of the job-related plans variable became larger and more significant as shorter and shorter moves were considered. The coefficient is 0.105 ($t = 5.57$) in explaining intercounty migration.

THE FAMILY APPROACH--THE INFLUENCE OF CHARACTERISTICS OF BOTH SPOUSES

The model underlying the regressions presented in this section is distinctive in viewing migration as a family decision; the wife's, as well as the husband's, characteristics have been hypothesized and shown to affect the family's migration decision. We have seen that several of the variables pertaining to the wife--her wage rate, hours of work, and share of family earnings; her occupation and industry; her age and education--have significant coefficients. One test of the family model is to see whether these wife's variables as a set add significantly to the explanatory power of the equations. A partial F-test shows that indeed they do. The value of the appropriate F-statistic for the interdivisional equation is 2.4, which is significant at the 0.015 level.[*]

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*Of course, persons who say in 1971 they plan to move may not move between 1971 and 1972 but may still effectuate these plans later. However, Duncan and Newman (1975) find that most of the planners who do in fact move do so within the first year of stating their intention. Only 42 percent who said they planned to move for job-related reasons actually moved within the next three years, but 76 percent of these did so within the first year. See Duncan and Newman for a more detailed study of the differences between the determinants of plans to move and actual moves. Duncan and Newman conclude that many job-related moving plans are not fulfilled because they are too costly. They find family income to be a major (positive) determinant of which planners do in fact move (although their bivariate results imply that the relationship is nonlinear and largely negative).

OTHER EXPLANATORY VARIABLES TRIED

In earlier stages of this research, other explanatory variables were also tried to determine the effects of migration of factors often hypothesized to affect geographic mobility. These included:[**]

- number of persons in the family unit
- ages of children
- whether the family receives welfare, and if so how much
- whether the family head is a veteran
- whether the family head is disabled
- whether the family lives in a metropolitan area
- whether the family lives on a farm
- the IDP's measure of risk avoidance
- various measures of climate
- area population size
- area size in square miles
- 1968-1972 rates of growth of male and female wage rates in the area
- average area male and female wage rates.

None of these variables had significant effects on interdivisional migration.

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[*] Note that the equation includes some variables, e.g., PV^{fam}, Nonwg. Inc., that contain the wife's components but were not excluded for this test.

A similar test on the husband's variables produced a larger F value.

[**] See the footnote on p. 64 for other measures of location-specific capital that were considered.

V. CHOICE OF DESTINATION ANALYSIS

The analysis in the preceding section dealt with the determinants of geographic mobility, identifying those variables that influence whether or not a family migrates. In this section we focus on those families who migrated interdivisionally between 1971 and 1972 in an attempt to determine the factors that influence their choice among the eight divisions that were possible destinations.

We showed in Sec. IV that, contrary to the findings of many studies (e.g., Lowry, 1966), economic conditions at origin (as well as the husband's and wife's personal characteristics) do affect outmigration. Having shown "push" to be operative, we now turn to the question of whether migrants choose to move to areas where the "pull" of better job opportunities is strongest.

To my knowledge, the only multivariate studies of how migrating families choose among alternative destinations have used aggregate census data (e.g., Lowry, 1966; DaVanzo, 1972; and Wadycki, 1975; Greenwood, 1975a, contains a list of such studies). Oftentimes, these studies explore the determinants of net migration (e.g., Fields, 1974) and thus only estimate the combined effect of the influence of an explanatory variable, say the unemployment rate, on both outmigration and inmigration (destination choice). Some studies focus only on inmigration, but typically the denominator of the migration rate, if in fact a *rate* is calculated, is not the population at risk (see DaVanzo, 1976b). By using household-level data we are able to avoid these problems.

The choice of destination analysis presented in this section is restricted to a consideration of interdivisional migration so that the number of alternative destinations is empirically manageable. The number of migrants on which the empirical work is based--43 (30 nonmilitary)--is very small. Nonetheless, the results illustrate the promise of this approach and provide hypotheses that can be tested in further research.

One technique appropriate for explaining how the attributes of alternatives affect the choices among them is MacFadden's maximum likelihood multinomial logit technique (often referred to as "conditional logit"), an extension of dichotomous logit analysis to the case where there are more than two choices. (For a description of this technique, see MacFadden, 1973.) Below we estimate an equation explaining destination choice using this technique.

However, with such a small sample we are unable to investigate the ceteris paribus influence on migration of all the factors thought to affect destination choice, or to look for interactive effects, such as those found in other work. For example, using aggregate census data, DaVanzo (1972) found the absolute size of the deterrent effect of distance to be negatively related to the level of family income; DaVanzo (1976a) estimated distance effects to be negative and significant for nonreturn migration but positive and significant for return migration. The type of data used here should permit further tests for such relationships using more appropriate data, but unfortunately the small sample for this study precludes this possibility here. Pooling various years of the data and adding other demographic groups to increase the sample size, as suggested in Sec. VI, should enable one to consider these potential influences on destination choice.

The conditional logit model presented in Table 7 contains only four variables representing four of the major factors often discussed as potentially important determinants of destination choice.

For each family there are eight observations, representing the eight possible destinations, j. The explanatory variables are: PV_{ij}^{fam}, the present value of the difference between what the family could earn at destination j and what it would earn if it stayed in its 1971 location, i; the unemployment rate at j; and the natural logarithm of the distance between i and j. In addition, there is an interaction between PV_{ij}^{fam} and a dummy, Here Before, that indicates whether the family resided in area j recently (between 1968 and 1970). This interaction will enable us to test whether the effect of the present value variable is different for potential return migrants than for persons who have not lived in an area before. The Here Before dummy was tried alone to test whether, independent of the values of the other explanatory

Table 7

CONDITIONAL LOGIT EQUATION EXPLAINING CHOICE OF DESTINATION FOR 30 NONMILITARY MIGRANTS

Variable, X	Coefficient, β^a	"t"
Family present value of wage differences (in $1000s) ($PV_{ij}^{fam}$)	0.00548	(1.53)
PV_{ij}^{fam} · Here $Before_j$	0.0139	(1.46)
Unemployment $Rate_j$	0.00909	(0.05)
Ln $distance_{ij}$	-0.322	(-0.81)
-2 · likelihood ratio = 119 ~ $\chi^2(4)$ (significant at better than 0.995)		

[a] The conditional logit model estimates coefficients, β, for the following equation:

$$P_i(j|X_{ij}) = \frac{e^{\beta X_{ij}}}{\sum_{k=1}^{J} e^{\beta X_{ik}}}$$

where j indexes alternatives, i individuals, J is the total number of choices facing each individual, and X is a vector of explanatory variables;

$$\sum_{j=1}^{J} P_i(j) = 1 \quad \text{for each } i.$$

Note that

$$\frac{\partial P(j)}{\partial X_j} = \beta \cdot P(j) \cdot [1-P(j)].$$

If all destinations had equal probability of being chosen (0.125), each coefficient would be multiplied by 0.109 to convert it to a partial derivative.

variables, people are more likely to move to places where they lived before, but the computer program never converged when this variable was included.[*] Thus the specification used here constrains the effect of previous residence to be dependent on the size of the expected (gross) earnings gain.

In addition, in several instances below I contrast the average characteristics of chosen destinations with those of nonchosen alternatives[**] to tentatively indicate the direction of relationships not possible to investigate in the more appropriate multivariate analysis.

As in Sec. IV, the discussion is ordered by categories of explanatory variables; again, for each I discuss the hypotheses and the relevant findings of previous research and then the results of this empirical analysis. (The small size of the sample upon which the findings are based makes it inappropriate to draw policy implications from them.)

RETURN MIGRATION (PREVIOUS RESIDENCE IN j)

We showed in Sec. IV that families who moved recently are more likely to move again than families without recent migration experience. It is possible that many of these families are returning to the origin of their initial move. Eldridge (1965), Long and Hansen (1975), Lee (1974), and DaVanzo (1976a) all find a high propensity to return among those at risk to return migration;[***] that is, persons with previous migration experience are more likely to return to a place where they lived before than to move to a new place. Thus, in modeling destination choice, we hypothesize that a family who has moved at least once before and moves again is more likely to select as its destination an area where it lived before than one where it has never lived. This is because the family is more likely to have friends and relatives and other location-specific assets (e.g., job market information and clientele) in areas where it has lived before. The values of any location-specific assets left behind in the potential return destination are likely to depreciate as the time away increases. Thus attractions of the previous residence should be stronger the more recently the family left it.

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[*] There is a positive probability that the maximum likelihood estimates will not exist. Sometimes the iterative technique does not converge when an explanatory variable is too good a predictor of the dependent variable; perhaps this is the case with the Here Before dummy. For example, if each person in our sample had lived in one place, j_1, before and each moved to j_1 in the period under consideration, the Here Before dummy would be a perfect predictor of destination choice and the computer program would never converge.

[**] The latter is the average across sample families and across the seven nonchosen destinations for each family.

[***] The referenced studies are based on aggregate census data; they use a five-year migration period and define a return move as a move back to the place of birth.

Residence information from the first three years of data from the Income Dynamics Panel is used to test these hypotheses. Before discussing the multivariate results, a brief look at the characteristics of our sample confirms the importance of return migration. We saw in Table 5 that the total sample (of 1952 families) includes 142 families with recent (1968-71) interdivisional migration experience and that 25 of these migrated interdivisionally between 1971 and 1972. Nineteen or 76 percent of these 25 potential return migrant families who moved between 1971 and 1972 did return to divisions where they lived before (between 1968 and 1970). Thus 13.4 percent (19/142) of married couples who are potential interdivisional return migrants because they moved at least once interdivisionally between 1968 and 1971 did return to a division of previous residence between 1971 and 1972.* When we exclude families whose head was in the armed forces in 1971, we have 30 nonmilitary families who migrated interdivisionally between 1971 and 1972, 17 of whom also migrated between 1968 and 1971 and are hence potential return migrants. Twelve of these 17 families (71 percent) did return between 1971 and 1972;** thus, over 70 percent of repeat migrants in our sample are return migrants. Seven of the 17 nonmilitary repeat migrants reported they were looking for work before their 1971-72 move; six (86 percent) of these returned, providing tentative support for the hypothesis that potential returnees who are looking for work are especially likely to return. Recall that in Sec. IV we found that families with recent migration experience whose heads were looking for work were considerably more likely to move again than those whose heads were not engaged in job search. Now we see that of the potential return migrants who do in fact move, those looking for work before moving are more likely to be return migrants than are persons not looking for work at the time of the 1971 survey. Inability to secure employment may cause the family to become disappointed with the original move and to return. Friends and relatives left behind are likely to provide information about job opportunities in the potential return destination.

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*Of these 142 families, 33 made two or three interdivisional moves between 1968 and 1971; 23 (70 percent) of these 1968-71 multiple move combinations ended with a return move.

**Of the 12 returning families, four left the area to which they subsequently returned between 1970 and 1971, five left between 1969 and 1970, and three left between 1968 and 1969. Unfortunately, these numbers are too small to infer any pattern about how propensity to return varies with length of absence (for a study of this see Morrison (1976) and DaVanzo and Morrison (forthcoming)).

Most previous studies of repeat and return migration have used census data which compare (1) an individual's place of birth, (2) his residence five years before the census, and (3) his residence at the time of the census. A person is considered to be a return migrant if place (1) is different from place (2) but the same as place (3); and a nonreturn repeat migrant if (1), (2), and (3) are all different. Persons for whom (1) and (2) are different are potential return and repeat migrants.

The data used here underestimate the total number of return (and repeat) moves since they do not count moves back to places last lived in four or more years ago. Nevertheless, they imply that census figures seriously understate the amount of return migration since they do not include the apparently numerous pairs of moves that occur within the five-year census reference period. For example, using 1955-60 census data Eldridge (1965) finds that one-third of all repeat interstate migrants (secondary + return migrants) are return migrants, whereas we have found that over 70 percent of families who make multiple interdivisional moves in our four-year period make return moves. Morrison (1976) provides further preliminary evidence supporting this contention: he shows for a variety of smaller geographic units (counties, "metros", regions, and superregions) that, when return migration is defined as a move back to a place where a person lived sometime in a 14-year period, 86 percent of return moves occur *within five years* of the initial move.

Turning to the polychotomous logit results in Table 7, we see that families are more likely to move to an area where they lived before than to one where they never lived if the family earnings they could receive there are higher than what they received before moving (i.e., if $PV_{ij*}^{fam} > 0$); the size of this effect is related to the size of the present value available at that potential return destination.[*] (This is discussed further in the next subsection.)

PRESENT VALUE OF WAGE DIFFERENCES

In choosing among alternative destinations, families are hypothesized to select the one where the present value of wage gains is largest, other things the same. Hence, we expect that the higher the present value of the difference between the wages the family members could earn at destination j* and the wages they do earn in their current residence, the more likely the family is to choose destination j*.

To test this hypothesis, variables have been defined that measure, for each potential destination j for both the husband and the wife, the present value of the difference between what each could earn at j and what each does earn at their current residence. The husband and wife's present values have been added to form family present value variables for each area j, PV_{ij}^{fam}, which are similar to those used to test the present value hypotheses in the whether to migrate analysis.[**]

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[*] Since PV_{ij}^{fam} is the gross earnings difference and is not net of migration costs, some families may be more likely to move to a place where they lived before than to an unfamiliar area, even when the *net* monetary returns are negative (as long as they are relatively small in absolute value; presumably positive nonpecuniary returns compensate for this).

[**] As before, a potential wage $\hat{W}_j$ is estimated based on the husband's (wife's) personal characteristics and how these are valued in each potential destination j. As before, $\hat{W}_j$ is adjusted by $W_i/\hat{W}_i$,

Before turning to the multivariate results, a simple comparison of the average husband's, wife's, and family present values (PV) associated with the chosen destinations with those for the destinations not selected shows that families do indeed move to areas where all the measures of wage gains are highest. In fact, selected destinations have relatively higher wage gains compared to areas not chosen for the wife than for the husband. For the nonmilitary sample (n=30), we find the following:*

Chosen destination (n=30)		Destinations not chosen (n=30x7=210)
Husband's PV	$26,100	$14,200
Wife's PV	8,520	890
Family PV	34,620	15,090
Wife's share of family PV	24.6%	5.9%

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husbands are assumed to lose when they move some of the wage premium they received for specific experience on the premigration job or for being in a union, and wage rates are deflated by divisional cost of living indices. As in the whether to migrate analysis, for each j the differences between this adjusted imputed wage, $\tilde{W}_j$ and W_i are multiplied by the number of hours the husband (wife) worked in 1970, discounted by an 8 percent rate, and summed over the number of years remaining until the husband (wife) is 65. A 2.5 annual growth rate of wages is used for men. For wives, the annual rate of growth of (female) wages is assumed to differ among divisions. For each division, the 1968-72 annual rate of growth of wages is estimated as one-fourth the coefficient of the 1972 time dummy in the wife's wage equation for that division (this coefficient shows how many percentage points larger the wage rate was in 1972 than in 1968, other things the same). For husbands, present values constructed using divisional rates of growth estimated from the time dummy coefficients of the male wage equations did not have as high explanatory power as those using the same annual rate of growth for each division.

*The t-statistics testing for significant differences between chosen and nonchosen destinations are around 1.

For places lived in before the difference is even more striking:*

	Chosen places (n=12)	Destinations lived in before but not returned to (n=6)
Husband's PV	$11,960	$-8,790
Wife's PV	1,890	- 460
Family PV	13,850	-9,250
Wife's share of family PV	13.6%	5.0%

Thus, it appears that potential return migrants who move but do not return choose to move elsewhere because of poor earnings opportunities in their potential return destinations.**

For places not lived in recently we find the following:***

	Chosen destinations (n=18)	Destinations not chosen (n=204)
Husband's PV	$35,520	$14,870
Wife's PV	12,940	930
Family PV	48,460	15,800
Wife's share of family PV	26.7%	5.9%

In the multivariate analysis we see that, when distance and unemployment rates are held constant, families are indeed more likely to move to destination j* the higher the earnings gains associated with j* relative to other possible destinations. The coefficient is significant at the 10 percent level. This effect is larger if the family lived in j* before; i.e., the coefficient of PV_{ij}^{fam} · Here Before is positive. If the family had equal probability of choosing each destination j (P(j) = 0.125), a \$10,000 increase (decrease) in PV_{ij*}^{fam} would cause a 0.6 percentage point increase (decrease) in the probability of choosing j* if the family had not lived in j* recently and a 2.1 percentage point increase (decrease) if the family had lived in j*.[*]

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*The number of potential return destinations (18) is larger than the number of potential returnees (17) because one family lived in two places (other than i) between 1968 and 1970.

**Alternatively, it could be those families for whom the present value associated with the initial move ($PV[W_i - W_{j*}]$) was algebraically smallest who chose to return, where i is 1971 residence and j* the potential return destination.

It may be seen that wives contributed a smaller share to the gains received by return migrants compared with nonreturn migrants.

***Note that the present values associated with places lived in before are considerably smaller than those associated with places where the families have not resided previously. Of course, this could be due to differences in the types of families in the two samples (e.g., the former may be older on average than the latter).

The numbers presented in this subsection and in Tables 2 through 4 in Sec. IV confirm the importance of potential earnings increases as a determinant of migration decisions. We saw in Sec. IV that families are more likely to move the greater the earnings increase they could experience by doing so. Now we find in this section that in choosing among alternative destinations, a family tends to select the one where this earnings increase is largest--for the family as well as for the husband and wife individually.[**] In fact, selected destinations are characterized by *relatively* higher wage gains compared to the areas not chosen for the wife than for the husband. This is further evidence that the wife's characteristics *and opportunities* do play an important role in the families' migration decisions.

DESTINATION UNEMPLOYMENT RATES

Other things the same, we expect the probability that a family will move to a particular place to be negatively related to the probability that its members would be unemployed there. Previous studies have had difficulty finding such a relationship empirically, but this may be because (1) they often explain net migration, and thus estimate the combined effects of unemployment on in- and outmigration and are unable to disentangle the two (e.g., Fields, 1974); (2) or, if they focus on inmigration, they define the dependent variable incorrectly (see DaVanzo, 1976b, on this point); or (3) they use an unemployment rate that is defined for the end of the migration period and hence may have been affected by the intervening migration.* Studies that compare the two, e.g., Wadycki (1975), show that beginning of period unemployment variables do perform closer to expectations than end of period variables.**

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[*] While these figures may seem small in absolute size, their relative magnitudes are not. In the above example, the \$10,000 increase in PV_{ij}^{fam} would be associated with a 4.8 percent increase in the probability that a family that had not lived in j* recently would choose to move there and a 16.8 percent increase for a family that lived in j* within the last three years.

[**] The couples who move may be those for whom the husbands' and wives' separate present values of earnings gains are most highly correlated across geographic labor markets.

In addition to showing the important role earnings gains play in migration decisionmaking, the results presented here and in Sec. IV provide a vote of confidence for the methodology used to construct the variables measuring them (i.e., imputing the wage that would be earned in each potential destination from wage equations estimated separately for each area).

In the destination-choice analysis presented here, the average divisional 1971 unemployment rate is used to assess whether the extent of unemployment at destination affects destination choice.*** Its coefficient is not statistically different from zero ($t = 0.05$).

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*These same arguments apply to other explanatory variables, e.g., area wage rates or income.

**Wadycki's study does not suffer from any of the problems noted above and hence comes closest to the "correct" use of aggregate data to assess whether destination unemployment rates affect destination choice. Wadycki's dependent variable is the share of outmigrants from state i who moved to state j during the five-year census reference period, for all $i \neq j$. Using 1955-60 data, he finds that the higher the beginning of period unemployment rate in destination j, the less likely j is to be chosen (the t-statistic on the unemployment rate exceeds 8); end of period rates produced a *positive*, statistically significant relationship. However, when he uses 1965-70 data, beginning of period destination unemployment rates are *positively* and significantly ($t > 4$) related to the probability that the destination was chosen (results using the end of period unemployment rates are not presented).

***In using the average divisional unemployment rate at destination as my measure of the probability of unemployment at j, I am implicitly assuming that, for each j, all individuals have the same probability of being unemployed if they move there. A more sophisticated approach would impute an unemployment probability or probability of finding an (acceptable) job for each potential destination to each individual in the sample, based on his personal characteristics. The methodology for estimating these individual potential unemployment rates would be similar to that used in this report to estimate individualized wage opportunities for each potential destination; logit or probit analysis should be used so that the predicted probabilities fall within the 0-1 range.

A comparison of the average unemployment rate for chosen and nonchosen destinations also shows the former to be larger than the latter, though not significantly so. However, the few interdivisional migrants who were unemployed before they moved did choose areas with lower unemployment rates; the mean unemployment rate in chosen destinations was 5.7 percent compared to 6.2 percent in areas not selected.

DISTANCE

The negative relation between the size of the migration flow between two areas and the distance between them is one of the best-known and most consistent findings of statistical studies of migration. Many of the costs of moving--direct costs, opportunity costs incurred while moving, costs of revisiting friends and relatives left behind, information, and psychic costs--are likely to be positively related to the distance moved. In addition, distance may be a surrogate for intervening opportunities; the greater the distance between i and j, the greater the number of possibly attractive intervening opportunities. Several studies (Wadycki, 1975, and other papers referenced therein) have shown that the inclusion of variables measuring the best intervening alternatives substantially reduces the size and statistical significance of the deterrent effect of distance. Unfortunately, our small sample size does not enable us to include measures of intervening opportunities in this empirical analysis; thus, the distance coefficient estimated in Table 8 incorporates the effects of intervening opportunities.

As expected, the average distance to chosen destinations (852 miles) is smaller than that to nonchosen destinations (945 miles). (The t-statistic testing for a significant difference equals 1.)

If there is some "learning by doing" associated with migration, families who have moved before should be more efficient at moving (able to move a given distance at a smaller cost) than families without previous migration experience. In addition, persons with previous migration experience are acquainted with places they have lived before and are likely to still have friends and relatives in those places; therefore, the information and psychic costs of moving back to such places should be lower than those of a nonreturn move.* Thus, distance is expected to be less of a deterrent to return and subsequent (secondary, or repeat) migration than to "new" migration. This appears to be true, for the average distance to the destinations chosen by previous migrants (885) is larger than that to destinations chosen by families without recent migration experience (810), whereas the opposite is true for nonchosen destinations; the average distance to destinations *not* chosen by previous migrants (939 miles) is slightly smaller than that to destinations not chosen by families who did not move between 1968 and 1971 (952 miles). Nevertheless, potential returnees appear to be more likely to return to near than to far potential return destinations. The average distance to return destinations chosen by potential returnees was 784 miles, while the average distance to the few potential return destinations not selected was 979 miles.

In the conditional logit equation, the natural logarithm of distance is used to measure distance-related costs because the marginal cost of moving an additional mile is assumed to decrease as the distance moved increases. The coefficient is negative, as expected, but is not significant at conventional levels. The coefficient indicates that, other things the same, an area 1000 miles away is 8 percentage points (64 percent if all areas had equal probability of being chosen) less likely to be chosen than an area 100 miles away.

MILITARY

The total sample used in this study includes families whose heads were in the armed forces at the time of the survey. It is possible that some of these military families who migrated moved to other military assignments. Indeed, the 13 military families who migrated between 1971 and 1972 were significantly more likely to move to an area the higher the percentage of the U.S. white male military population residing in that division. I found a similar result in my analysis of census data (DaVanzo, 1972).

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*In a study using aggregate census data (1976a), I found a positive and significant partial relationship between distance and the probability of return migration; this was true for blacks as well as whites. I noted that perhaps persons are more likely to be disappointed with long-distance moves. It may be that the accuracy of the perception the migrant had of destination opportunities before the first move may have been negatively related to the distance of that initial move (Yezer and Thurston, 1976). It is also possible that the fact that a long-distance move was made initially may indicate that the intervening opportunities were not (and are not now) attractive.

As in the earlier study, the apparent influence of the other explanatory variables is weakened when military migrants, who do not necessarily respond to those explanatory variables, are included in the sample. For example, when the military families are included, the average husband's present value for chosen destinations no longer exceeds that for nonchosen destinations. These findings, together with the sample differences found in Sec. IV, underscore the importance of excluding military personnel from the sample when estimating models that endeavor to explain civilian migration.

VI. SUMMARY OF MAIN FINDINGS, POLICY IMPLICATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

SUMMARY OF MAIN FINDINGS

This report has presented a model of migration in which the family rather than the individual is the decisionmaking unit. It has tested this model with household-level data from the Income Dynamics Panel and has demonstrated a number of interesting and important relationships.

Some of the findings help to explain paradoxes found in previous research (for example, the seeming absence of "push" of origin economic conditions), whereas others confirm relationships found before (e.g., the effect of previous migration on subsequent geographic mobility) but shed new light on the causes of the underlying behavior. Certain results disagree with the conclusions of some recent studies (e.g., those that find that a working wife always inhibits family migration), and others illuminate policy-relevant issues (such as how a negative income tax might affect migration) never investigated before because the appropriate data were not available. (The policy implications of the research are discussed later in this section.) In particular, the findings of this study have helped improve our understanding of the migration process by providing answers to the following types of questions:

How do families respond to economic adversity? Does unemployment "push" a family to move?

Analyses of migration behavior based on aggregate data have resulted in conflicting and often paradoxical answers to the question of the strength of economic "push". We can now, based on household-level data, offer some specific insights into how economic adversity affects the probability of migration and how responsive people are to improving their economic situation. We have seen that families whose heads are unemployed or are dissatisfied with their jobs are more likely to move than those whose heads are not searching for different jobs. Recent arrivals to an area who cannot find acceptable jobs are especially prone to migrate again. Thus we find that household-level unemployment or dissatisfaction with a job does "push" a family to move. Furthermore, we have shown that local economic conditions (origin unemployment rates) *do* affect outmigration, but only within the subset of people most seriously affected by them--the unemployed. In addition, we have seen that unemployed and other persons looking for work are more responsive to the other economic determinants of migration (family income, origin wage rates, and expected earnings increases) than persons apparently satisfied with their jobs.

How important is return migration?

Return migration, a phenomenon about which we know very little, has loomed as a central factor in understanding migration, especially its repetitive aspects. Chronic mobility has been shown to be an important determinant of our current geographic distribution of population (Morrison, 1971), and return migration holds the potential for reversing the dominant directions of all migration flows. This study has helped to disentangle some of the underlying determinants of repeat and return migration.

We have found that families are much more likely to move in a given period if they have moved before in the recent past. This effect results mainly from a strong tendency for people to return to places they have recently left. A substantial portion of potential return migrants do in fact return. Recent arrivals who are unable to find acceptable employment are especially likely to move again and to return to places where they lived before.

Furthermore, we have shown that families who made *several* moves are more likely to move again than families who made one or no recent moves *if* those multiple moves were a series of nonreturn moves; families who made multiple moves that concluded with a return to a place lived in previously are, in some cases, no more likely to move (again) than families who have not moved at all, thus bringing into question the prediction of high subsequent migration propensities for this subset of "chronic" movers.

In addition, this study has underscored the importance of using longitudinal data to study "chronic mobility": since many return and repeat moves occur within a few years of the initial moves they follow, census data seriously understate the importance of both phenomena.

Is the wife a passive "secondary" migrant without influence on the family's migration? Does a working wife discourage a family's migration?

We have shown that wives are not passive secondary migrants, but rather appear to have a significant influence on the family's decision on whether to move and where. Even though we have less detailed information on wives' than on husbands' characteristics, the characteristics of the wife (hours of work, share of earnings, etc.) add significantly to the explanatory power of equations explaining whether a family moves. Furthermore, families with working wives are not necessarily less likely to move than families with nonworking wives, other things the same. Families in which the wife works but does not earn a substantial portion of the family's earnings or in which the wife is fairly young and earns a lower wage in the labor market where the family currently resides than she could elsewhere appear to be more likely to move than families with nonworking wives. Also, families who choose to move tend to select destinations where both the husband's *and wife's* earnings are highest; families not only move to areas where the potential increase in family earnings is maximized, but at the same time select those where the wife's contribution to that gain is largest.

How do the husband's and wife's age and education affect family migration?

Age and education, typically found to be among the strongest correlates of the propensity to migrate, appear to be relatively unimportant in explaining the migration of married couples when other migration determinants--many of which vary with age or education--are held constant.

POLICY IMPLICATIONS

These findings are based on the migration behavior of one sample of families over a one-year period of time (1971-72) and hence may be sample- or period-specific. However, assuming that results continue to hold when tested for different specifications, demographic groups, samples, and time periods,[*] they have the following implications for policy:

- Since unemployed persons, especially those living in depressed labor markets, are already, without direct policy influence, more likely to move than persons who are are not looking for work, policies may not be necessary to ease outmigration for a group already induced to leave. Such policies may just provide a costly duplication of the already effective influence of private market forces.
- Policies of investment to expand economic opportunities in depressed areas are likely to help prevent economically forced outmigration.
- Although the size and sign of the income effect on migration are not robust across alternative methods of estimating it, the results presented here are consistent in indicating that income effects are generally insignificant for persons not looking for work but significantly *negative* for the unemployed; apparently staying, rather than moving, is a normal good for this group. Assuming that this result is measuring a true behavioral effect (and is not due to some unknown bias in the way we have constructed our income measures or specified the rest of the migration equation, or to any peculiarity of our particular sample), it has a very important policy implication: unless the receipt of an income bonus is conditional upon its being used to help defray the costs of moving, income supplements given to the unemployed may be used

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[*] See the next subsection on suggestions for further research.

to subsidize their staying in the current location rather than to finance job search in other labor markets.

- Policies that affect net wage rates--for example, minimum wage laws, wage subsidies, income tax laws, and the provisions of income maintenance programs--may change the opportunity costs of moving, the earnings returns to migration, the level of family income, and each spouse's share of earnings; each of these in turn may affect the profitability of an investment in migration; the net influence is ambiguous a priori. An increase in the husband's and/or wife's wage rate that is local only (or is national but does not substantially increase the size of the present value of geographic wage differences) will in most cases reduce the probability that the family will migrate, unless the family head is unemployed. Policies that increase wages elsewhere relatively more than those in the labor market where the family currently resides may increase migration.
- Policies such as the Equal Rights Amendment that might increase wives' attachment to the labor force are likely to have mixed effects on migration, increasing the migration propensities of some families (especially those with young wives whose opportunities in their current labor market are inferior to those available elsewhere), while decreasing those of others (particularly families in which the wife makes a substantial contribution to family income in the current location and does not have good opportunities elsewhere).
- We have shown that many long-distance moves are return or repeat moves by families who moved previously and were unemployed or unhappy with their jobs before the return (repeat) move. Apparently dissatisfaction with the outcome of the first move triggered the return (repeat) move. If this series of circular (multiple) moves was not planned at the outset but was the result of unforeseen consequences due to unreliable (or no) prior information, policies that help discourage such costly and unproductive repeated moves should help to improve the efficiency of migration.

SUGGESTIONS FOR FURTHER RESEARCH

The results of this research have advanced our understanding of the migration of individuals and families in several ways, as discussed above. They have shown the advantages of household-level data for studying the interactions of husband's and wife's characteristics as determinants of family migration and for disentangling some relationships, e.g., the effect of unemployment on migration, that were not clear in previous studies based on aggregate data. The longitudinal aspect of the data has been less fully exploited in this study but has nonetheless shown its promise for helping us to understand the effects of past behavior on subsequent behavior. Future studies should pay close attention to family interactions and should try to take further advantage of the longitudinal aspects of the IDP and other newly available panel studies, such as the "Parnes" National Longitudinal Surveys.

Also, further research should explore the applicability of the results presented here to other time periods, other demographic groups (e.g., nonwhites and persons not currently married) and across the demographic subgroups aggregated together here; for example, certain parameters may differ by life-cycle stage.

Other suggestions for extending the research given here include the following:

1. The whether to migrate and choice of destination decisions should be considered together, since it is likely that families base their decisions regarding whether to move or stay on whether there are destinations worth moving to. In the present study we used summary indicators of the costs and benefits of migration in general, e.g., maximum benefit/cost ratios, to explain whether or not a family moved, but we were unable to consider tradeoffs and interactions between the various attributes for a particular destination. For example, how much higher does the present value of wage gains need to be to induce a family to move an additional 500 miles? What is the tradeoff between increased wage gains and an increased probability of unemployment? A statistical technique for

analyzing choices among multiple alternatives, e.g., polychotomous logit analysis, should be used for such a combined analysis.

2. The approach used here of imputing wages that could be earned in various potential destinations to explain whether a family moves and how it chooses among potential destinations appears very promising,[*] but implementing it led to the choice of geographic units that are large and heterogeneous (census divisions) and between which relatively few people migrate. Two different, though related, considerations led to this choice:
    a. the areas had to be large enough to provide sufficient sample sizes for estimating regional wage equations.
    b. the number of areas had to be small enough to model choices among them. Explaining choices among more than 10 alternatives becomes unwieldy empirically.

    The first restriction could be circumvented by using a larger data set, e.g., census data, to estimate the wage equations for a (larger) number of smaller areas and defining the explanatory variables to be measures available both in that data set and in the one being used for the migration analysis. The coefficients of the wage equations estimated using the, say, census, could then be used to impute wages to persons in the, say, IDP data, using IDP values of the explanatory variables. In relaxing the second restriction, we want to redefine the potential destinations so that the number of them is still fairly small but that there are a larger number of migrants. Possibilities include the following:
    a. The alternative destinations could be classified by their proximity to the current labor market, e.g., moving (a) within current labor market, (b) to the best adjacent

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[*] Future work should look for a way to incorporate the ex-post experiences of migrants (measured over a number of years, if possible) into the calculation of ex ante expected earnings gains, but should be careful to avoid selectivity biases.

labor market, (c) to the best alternative with a 100-mile radius, and so on, where "best" might be defined by a weighted average of wage opportunities and employment probabilities; alternatively, we could have a move (a) within the county, (b) to a contiguous county, (c) to a noncontiguous county within the same state, (d) to a contiguous state, and so on. The main problem with this approach is summarizing the relevant attributes (average? maximum or minimum?) of each alternative.

b. Alternative destinations could be classified by type--e.g., large metropolitan labor markets, small rural markets, etc. The main shortcoming of this method is that it will be difficult to control for the geographic dispersion of these types and hence to consider distance as an explanatory variable. Also, again it will be necessary to somehow summarize the characteristics of each type of destination.

c. The choices could be defined to be a certain number, say eight to ten, of the most popular destinations and one or several residual categories, perhaps geographically defined, e.g., "other southern areas." The definition of the choice set could differ among demographic or skill groups; e.g., the set of most popular destinations for blacks may be different from that for whites.

d. Since a substantial proportion of moves in a given period are return or repeat moves and since these repeat migrants appear to respond differently from nonrepeat migrants to the variables that influence migration decisions and destination choice, one may want, for certain questions, to restrict the sample to persons and families who have moved previously and model their decisions among the alternatives of "staying," "returning," and "moving elsewhere."*

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*Each of these methods (a-d) is based on an implicit assumption about the way migrants evaluate alternative destinations. The choice among these methods to define the set of alternative destinations should be based on an evaluation of the validity of the assumptions

3. Other pairs of years should be considered, both to determine whether parameters vary over time, say with the business cycle, and also to increase the number of observations considered. If observations from a number of years are pooled, care should be taken to use econometric techniques that allow for the joint dependence of migration decisions in various years[*] and for the intrafamily correlation of residuals over time.
4. More attention should be given to understanding and modeling the migration behavior of the unemployed and others looking for jobs; special attention should be given to considering migration as a type of job mobility, to understanding which job searchers choose to move, and to modeling job search in a family context. We have shown in this report that unemployed persons are more likely to move than persons who are not looking for work. Furthermore, we have shown that, of the unemployed, those who have low incomes, high wage rates, or have lived in their area of current residence less than three years are the most likely to move. However, these findings are based on a small number of unemployed persons and further work is required to see if they hold for other time periods, other demographic groups, and within age and education subsets of the group considered here. In addition, a number of other interesting questions could be investigated:
   - o How does the availability and receipt of unemployment insurance influence migration?

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underlying each. For example, the second method is based on the assumption that all large metropolitan areas offer the same opportunities to the potential migrant, and that the opportunities offered in one small rural market are similar to those available in another, and so on. To test the validity of this assumption one should compare, for various skill levels, the variances of wages and employment probabilities within and among destination-type categories. One wants to choose categories whose within-category variance is small relative to the between-category variance. To evaluate criterion (3) one would determine what proportion of all moves are made to the eight or ten most popular destinations. Furthermore, different methods may imply different geographic units to be used for estimating the wage equations.

[*] This should be done regardless of whether years are pooled.

- Does the wife's unemployment have the same effect on family migration as the husband's?
- How do the number and length of spells of unemployment affect migration?
- Do the migration propensities of unemployed persons differ by the reason for leaving the last job (quit, layoff, etc.)?
- Does the method of job search used by the head or wife affect the probability that the family will move?
- Are unemployed workers less likely to move when the average national unemployment rate is high than when it is low? How do the relationships discussed here vary over the business cycle?

In addition to including explanatory variables that would enable us to answer these questions, the effects of expected destination unemployment on migration and choice of destination should be estimated using more personalized measures of the probability of unemployment after migration. These could be imputed, using a methodology similar to that used to estimate destination wages here, from regressions of the incidence of unemployment or number of weeks of unemployment on a set of personal characteristics, with separate regressions estimated for each (type of) destination area.

5. We have shown here that a sizable proportion of the persons moving in a given time period have also moved before. It is likely, for this subset of persons, that the consequences of one move are in part the determinants of the next. And even for persons who have not moved recently, *changes* in their wages, hours of work, and incomes over time, as well as the levels of these variables, may affect their migration decisions. In previous research, the causes of migration have typically been studied separately from the effects,* and

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*The conceptually correct measure of individual and family *consequences* of migration would compare the postmigration earnings and employment stability of migrants with what they would have experienced scant attention has been given to the question of how changes over time in a family's characteristics and well-being may affect its propensity to move. Longitudinal data make such investigations possible.* Careful analyses of the longer-term determinants of migration should enable us to learn more about the role of migration as an adjustment to economic change. An integrated study of the determinants and consequences of geographic mobility should help us to understand better the causes of repeated migration and the phenomenon of the "chronic mover." Such a study may enable us to identify the types of people likely to become unplanned return or repeat movers and to suggest policies that may help discourage such costly and apparently unproductive series of moves.

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had they not moved. The latter, however, cannot be observed. In previous studies it has been proxied by the experiences of "similar" nonmigrants at the origin (e.g., Wertheimer, 1970), "similar" nonmigrants at the destination (e.g., Masters, 1972; Yezer and Thurston, 1976), or the premigration experiences of the migrants (e.g., Saben, 1964; Sandell, 1975). The last is preferable since it controls for unmeasured characteristics of the migrants that influence their experiences in all time periods.

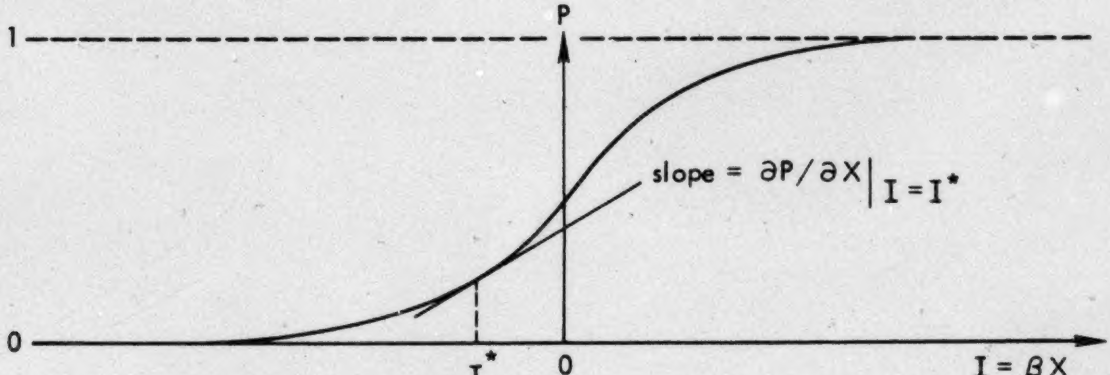
*Fuller use of the longitudinal nature of the data is not without its problems. The IDP, for example, surveys *households*, not individuals, per se. Sometimes, a series of family composition changes results in a primary respondent in later years who is unrelated to the person who was the main respondent in the first several years.

Appendix

THE PROBIT EQUATION

The probit technique estimates the parameters, β, of an index, $I = \beta X$, which relates family characteristics to the probability of migrating, P, through the formula for the cumulative normal distribution function:

$$P = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{I} \exp(-t^2/2)dt.$$



Unlike OLS, where $\partial P/\partial X_i = \beta_i$ in a linear specification, how a change in a variable X_i affects the probability in a probit equation depends on the value of I and, hence, the value of P:

$$\frac{\partial P}{\partial X_i} = \frac{\exp(-I^2/2)}{\sqrt{2\pi}} \cdot \beta_i.$$

$\partial P/\partial X_i$ ($\forall i$) is largest in absolute value when $I = 0$ ($P = 0.50$) and becomes smaller as P approaches 0 or 1. The factor that premultiplies β, $(2\pi)^{-1/2}e^{-I^2/2}$, has a maximum of 0.3989 and asymptotically approaches 0 as $I \to \pm \infty$.

In Table 4, the βs for the probit index are presented in brackets in the second subcolumn of Eq. (11). In the first subcolumn, $\partial P/\partial X_i$ has been evaluated at $I = -2.15$,* or $P = 0.0158$, which is near the mean interdivisional migration rate for this sample. $\partial P/\partial X_i$ has been calculated by multiplying the index βs by 0.04. Thus, the $\partial P/\partial X_i$ presented in Table 4 show how a family which has a 1.58 percent probability of migrating would respond to an incremental change in each explanatory variable. A family with characteristics that make it much more likely to migrate, e.g., one with previous migration experience and/or whose head is unemployed, would be more responsive (unless $P > 0.9842$). A family with characteristics that give it a 50 percent probability of migrating would be ten times more responsive to a given change in X (have ∂P/∂Xs ten times those in Table 4) than the average family depicted in Table 4.

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*For example, $I = -2.15$ for the following type of family:

- the head is employed but looking for a different job (JLK-E = 1)
- the family currently lives in a division with a 6 percent unemployment rate (Unempl. Rt. = 6)
- the maximum cost/benefit ratio = \$1000 ($PV^{fam} = 1$)
- family nonwage, nonlocation-specific income is \$300 (Nonwg. Inc. = 0.3)
- the husband's and wife's wage rates are \$3.75 and \$2.50, respectively ($Wg^h = 3.75$, $Wg^w = 2.50$)
- the wife works half-time [1000 hours] ($Hrs/yr^w = 1$)
- the wife earns 25 percent of family wage income (Wife's share of earnings = 0.25)
- the head has 12 years of education ($Educ^h = 12 = 1$).

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